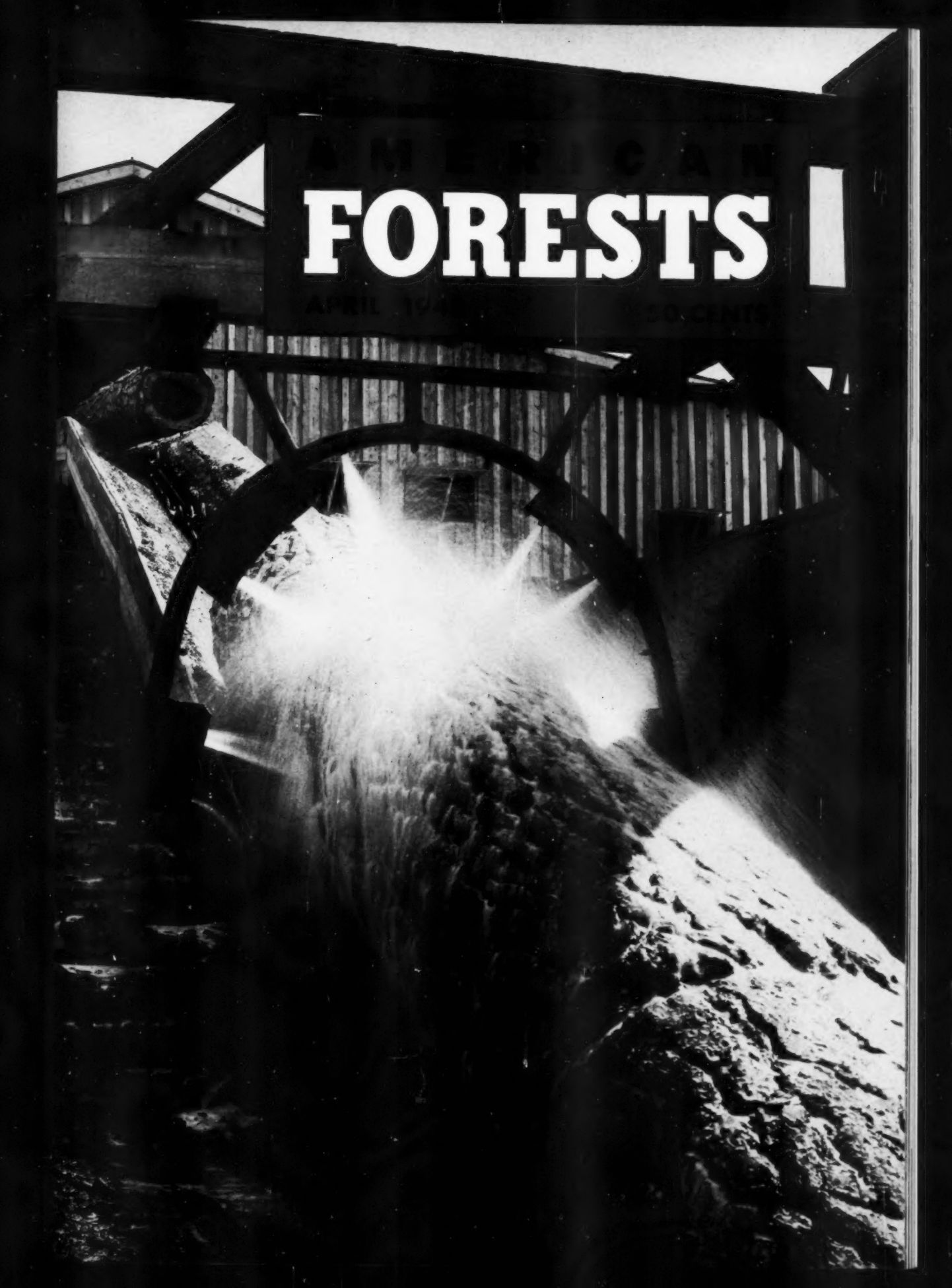
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Caterpillar Tractor Company Photograph

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Mid-April in Charleston, S. C.
Rutherford Platt

LETTERS TO THE EDITOR

The Fireplace and B.T.U.'s

SIR: The article entitled "How to Heat with Wood" in your January issue scarcely lives up to its title. A very interesting analysis of the heat-producing qualities of some of our American deciduous trees is presented in tabular form. The entire emphasis, however, is placed on burning wood in the fireplace.

In pioneer days it was a common and in some instances almost the exclusive source of heat for the family. In modern homes central heating keeps the householder warm and comfortable through the winter. Wood is burned in the fireplace for cheer and that cozy feeling during the long winter evenings. As long as the wood will blaze, the average householder is not too concerned whether the particular wood he is burning rates as "tops" in the B.T.U.'s or much farther down the scale.

I agree with the authors that wood is a relatively efficient source of heat. The fireplace, however, is not conditioned even when a "heatolator" is installed to test its efficiency; thirty-five percent would be high for the actual radiation of B.T.U.'s in the ordinary fireplace. The chimney gets the rest.

The statement that "a cord of good dry hardwood will produce more heat than a ton of anthracite coal" is seriously open to question. According to Dr. Henry Tieman of the Forest Products Laboratory, only black locust approaches anthracite coal in B.T.U.'s on a cord ton ratio. The best of the other woods listed by the authors would have only about an eighty percent equivalent.—*J. A. Cope*, extension forester, Ithaca, New York.

Maybe He Means More of Them

SIR: In your November issue, Arthur W. Priaulx in "The Other Side of Forestry," writes as follows:

"It may be a radical departure from the conventional to discuss forestry in the terms of products and markets and merchandising, but this writer ventures the opinion the foresters of the future will be trained in these fields as well as in the science of tree care, protection and growth."

Where has he been for the last twenty years? In 1929 I had a course in the New York State Ranger School in logging, lumbering and utilization! At Michigan State College one of our four major five-year courses in the Forestry School is "Forest Utilization and Technology," the senior year of which is about one-half business administration. Besides that major we have for several years had a special four-year course in "Housing and Lumber Merchandising."

Mr. Priaulx need no longer "venture an opinion." It is a fact and has been for years.—*Richard M. Potter*, Michigan State Forestry College, East Lansing, Michigan.

The Great Ginkgo

SIR: In scanning recent issues of AMERICAN FORESTS, I noted with interest an article on *Ginkgo biloba* (October 1947) and could not help contrasting the pictures used to illustrate this article with the patriarchal specimens of this tree one may see in the Orient. The tall, slender winter view is undoubtedly of the *fastigiata* variety, although the caption might lead one to think it a mature specimen of a typical form. Actually the mature form is truly majestic. May I call your attention to a picture of one in the book *Aristocrats of the Trees*, by E. H. Wilson.

The 1,200-year-old ginkgo

Also there is a difference in the growth lines of male and female trees. I should say the young specimen shown in AMERICAN FORESTS is a female tree with its softer lines and silhouette. The male tree in youth is more spiky. Someone has suggested that it has a certain similarity to the dragon, that mythical beast of its homeland—its spiky silhouette suggesting the spiny protuberances of the dragon's back and its scaly beauty to be seen in the overlapping leaves of odd form.

I am enclosing a photograph of a very old ginkgo tree at Sendai in Japan, together with a translation of a part of the government pamphlet concerning it. This tree is over 1,200 years old, 97 feet tall (Japanese measure), and 27 feet in trunk circumference. And the most curious thing about it is something never seen in the younger trees in this country, viz. the peculiar pendant growths from the branches which take root when they finally touch the ground.

Here is a translation of the tree's story: "In the period of Tempyo, 700 B.C., the Emperor Shome delivered an imperial message ordering the establishment of Buddhism throughout Japan. And in accordance with this imperial edict, Buddhist temples were set up.

"In January, 713 B.C., Fujiwara Fubitoason, a father of the Empress Komyo, offered a yearly contribution to these new temples. And one of the court ladies of the empress train, named Naiko-Hakujo, a daughter of Fujiwara Kamatari, learning of the new religion, solemnly begged the empress to permit her to become the first priestess. This being approved, she was given the name Kohakuni and a statue of Buddha. Then another court lady, Naihaku-Kojo, an aunt of the emperor and wet nurse of the emperor's children, also begged to become a priestess. So these two women were solemnly dedicated to the work and the prayers for peace and happiness of country and people.

"In talking with another priest at one time, she (Naihaku-Kojo) remarked that she had been greatly honored in being the nurse of the emperor in the past and that now, being eighty years old, she might at any time be called to heaven. Therefore, it was her will that they should plant a ginkgo tree on her grave instead of building a stone monument and that thenceforth her soul would live in the tree forever and devote itself to prayer for nurses. So when she passed away she was buried in a place near the temple and a ginkgo was planted on her grave. Year after year the tree throve until from its branches hung down the peculiar pendant growths like breasts. Therefore the people called it the nurse-tree. And since her conversation with the other

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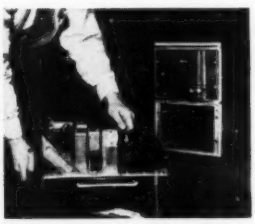

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THE AMERICAN FORESTRY ASSOCIATION
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woman-priest was widely known and touched the heart of the people, they came to worship the tree as the goddess of nurses. And even yet, after 1,200 years have passed, thousands of people still visit the tree and worship there."—*Florence B. Robinson*, associate professor of landscape architecture, University of Illinois.

The National Christmas Tree

SIR: The District of Columbia Recreation Board wishes to express its sincere appreciation for the attractive programs prepared and presented by The American Forestry Association for the twenty-fifth annual ceremony of the National Community Christmas Tree of 1947.

Each year the program becomes more beautiful and we have received many complimentary comments on the 1947 brochure. This traditional cooperation between the The American Forestry Association and our Recreation Board is a pleasant relation which we trust will continue through the years.—*Alice C. Hunter*, secretary, District of Columbia Recreation Board.

Tree Stamps Wanted

SIR: As a collector, I have been wondering why we do not have a stamp featuring the great sequoias of the Pacific Coast. I have in mind a stamp similar to those of our National Park Series made for the Sequoia National Park and picturing the General Sherman Tree with common and Latin names; or we could have a set of three stamps of the big trees, one to feature a big tree, one showing a special feature as a driveway tree and one of John Muir, Teddy Roosevelt and Gifford Pinchot meeting in the grove of big trees. Such a set to be in addition to a Sequoia National Park stamp.

Would The American Forestry Association be interested in promoting such stamps? Would the Association undertake to locate, depict and describe all the most important and famous trees of the world as a special feature of AMERICAN FORESTS? The trees of the greatest historic, commercial and esthetic value?

Other American trees are worthy subjects for stamps—live oak draped in moss, baldcypress with knees showing, American elm, black walnut and white pine. These and others would compose a glorious set of U. S. tree stamps. We hope national, state and local forestry, park and civic bodies will cooperate in procuring a series of tree stamps as worthy subjects of the United States of America.—*Christian Jensen*, Grove, Oklahoma.

Ownership No Guarantee

SIR: The article "Forests of Idaho," by John B. Woods (November 1947), was very good, but there is one point about the state forestry policy I would like to mention. When I was working for a large lumber company in Idaho in 1942-43, I marked a great deal of timber on both company and state lands. On the former, we were held to a strict diameter limit of sixteen inches for pine, eighteen inches for the other species, and were careful to leave and tag plenty of seed trees. On the state lands, however, we simply marked for harvest everything possible. It goes to show that public ownership is of itself no guarantee of conservative management.—*Henry S. Kernan*, South Worcester, New York.

Aid for European Mammalogists

SIR: To help scientists who are doing such valuable work, the American Society of Mammalogists has formed a committee to send aid to their colleagues abroad. We appeal to all naturalists to extend what help they can. We need money in any amount and gifts of old clothing. Ten dollars will send a CARE package of food; lesser amounts will pay for articles desperately needed, such as soap and thread. Old clothing must be sent by the individual donating it, but our committee can supply the names, addresses and sizes needed for each family. If the donor knows a European mammalogist he wishes to help, he may specify that his gift be sent to his friend.—*Mrs. D. R. Murdock*, chairman, Emergency Committee for Relief of European Mammalogists, 1305 Lindbergh Avenue, Washington C. H., Ohio.

More Wildlife

SIR: You publish such lovely photographs of many things pertaining to trees and the forests—except wildlife. It seems to me there is much of beauty and interest in animals of the forest and I would like more photographs of them in your pages.—*T. A. McDonald*, Cleveland, Ohio.

We Really Slipped on This

SIR: How many times, since publication of Bing Crosby's favorite tree (February issue) has your attention been called to the fact that western hemlock and not Douglasfir is the tree of Washington? Of course, Bing specializes in many things, principally golf, horses and singing. And I can imagine your chagrin at being so duped on anything regarding trees.—*Castlen Bear*, Washington, D. C.

TO YOUNG WORKING GIRLS — WHETHER IN LOVE OR NOT

When a young girl goes to work, she is apt to look on her job pretty much as a fill-in between maturity and marriage.

Whether in love or not, she's confident that a handsome breadwinner will come along... to provide her with a nice combination of bliss and security.

"So why," she may ask, "should I save money out of what I make?"

There are a number of reasons why—all good ones. For example:

(A) The right man might not happen along for some time.

(B) He might not be able to provide her with quite all the little luxuries a young married woman would like to have.

(C) Having money of her own is a comfort to *any* woman, no matter how successfully she marries.

So we urge all working girls—if you're not buying U. S. Savings Bonds on a Payroll Plan, *get started now.*

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Remember, girls—having money of your own may not make you *more* attractive, but it certainly won't make you *less!*

P.S.

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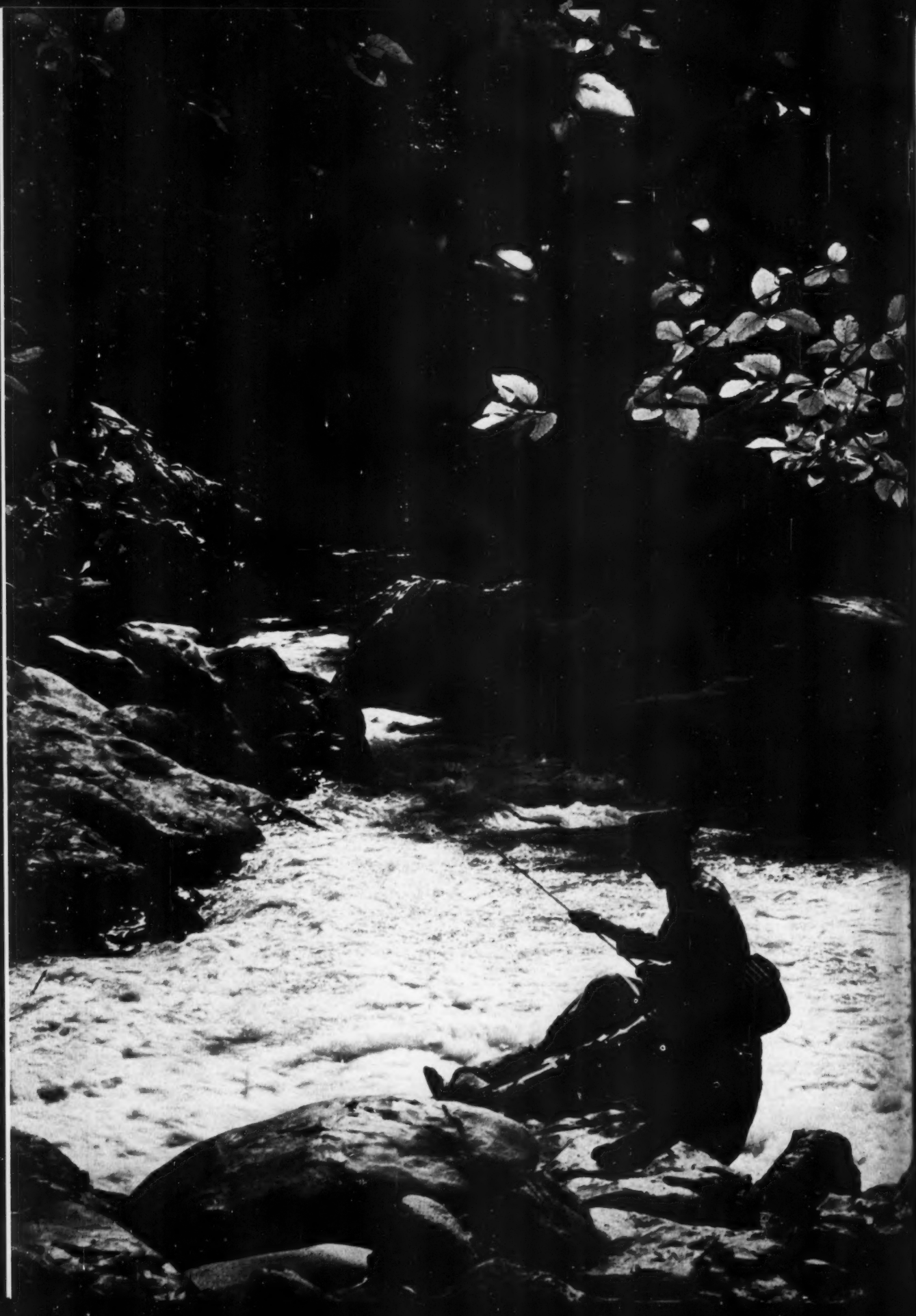


Editorial

Forests and National Security

WAR clouds now blackening both eastern and western horizons underscore the foresight of the framers of the National Security Act of 1947. In addition to "streamlining" the military establishment under the Secretary of Defense, the act provided for mobilization plans for all resources necessary to meet a national emergency.

The National Security Resources Board, to which the latter task has been assigned, is being manned to bring together an inventory of strategic resources and to establish policies for their quick orderly use as needed for defense. One division of the board is blueprinted to deal solely with timber and wood products.

Experience in World War II brought home all too critically that, even in this age of mechanization and atomic power, ready access to forests and their products are vital to the national security. Early in that war lumber and lumber products became critical materials and lack of them the cause of serious bottlenecks.

We entered World War II with tremendous stocks of seasoned lumber at the mills and yards. Today, we have no such backlog upon which to draw. Our stockpiles, such as they are, are largely on the stump in the forests of the West, the South, the Lake States and the Northeast. They are in national, state and community forests, in large private holdings and in farm woodlands, many of them depleted by World War II drains.

The questions that face the resources board are: what and how much do we have?—where is it?—how can it be made available?—and will it be suitable to the type of emergency we may have to meet?

In World War II, supply functions were ensnarled and delayed by a helter-skelter of agencies thrown together over a two-year period. In the next emergency the nation may not have two years in which to prepare. The problems may have to be met in two weeks, or even two days. Thus advance preparation is basic to effective national defense.

Advance preparation also may be one of the steps toward avoiding active military participation. In World War II the "strategic reserve" of unused munitions, of acre after acre of planes, of mile after mile of assembly lines hastened the end of the conflict, just by being ready to go. It is conceivable that a similar strategic reserve of natural resources primed for mobilization and action may well avert the bloodshed and ruin of actual warfare.

Perforce, the members of the board must think in terms of mobilization today and tomorrow; at the same time they must be aware of the continuing peacetime needs of the nation and must make preparations to meet them. While planning to utilize our resources now, real preparedness calls for plans and action to build up the renewable resources for mobilization against future military and economic catastrophes.

The establishment of the division of timber and forest products in the National Security Resources Board shows a recognition on the part of the military of the importance of the forest resource to national defense. At the time of this writing, however, the division is just a block on the organization chart along with nineteen other mobilization, planning and staff divisions. As yet, it is unmanned. The chairman of the board, we are advised, is endeavoring to recruit from government or industry the best qualified personnel. It is hoped he will be successful in securing men of practical vision — men who, while they concern themselves, as they must, with the immediate task of all-out preparation and mobilization, will not lose sight of the need of preparing for future contingencies.

One function of the board is to provide for reserves of strategic and critical materials. In the case of forest products, stocks of lumber and other materials may be developed for short-term retention but in the long-term planning the only feasible stockpiling of native forest resources is through better forest management. If our resource of 600 million acres of commercial forest land were brought to its maximum production, the nation would have a "stockpile on the stump" capable of meeting any conceivable emergency.

In bringing together its inventory of timber and forest products, the board has an excellent basis from which to work. The forest survey made by the U. S. Forest Service and the Forest Resource Appraisal conducted by The American Forestry Association following World War II provide a background of timely information. This basic work needs to be extended and refined to meet the needs of defense planning.

Under its "watch-dog" authority which is very broad, the board doubtless will need to exercise some control over the writing of wartime specifications for military and non-military uses of forest products. This, in the interest of reducing waste of high-grade materials and specialty items and to avoid the confusion and waste of over-estimates in a panicky endeavor to get the job done at any cost.

Research in wood utilization to develop new uses of woods we have in abundance and new methods of conserving for military use specialty woods in short supply—these, too, are important phases of preparedness.

Fundamental, of course, to maintenance of adequate supplies of wood to meet present and future emergencies is prevention and control of forest fires. Here our area of heavy forests take on the aspect of thousands of Willow Runs or Oak Ridges—attractive to incendiarists, saboteurs and enemy aircraft.

Legislation which will have the effect of hastening depletion of the nation's forest resources is another phase of national defense that calls for consideration in securing adequate preparedness. A current example is the Lemke bill now pending in Congress which would parcel out for private acquirement and disposal the virgin forests of Alaska—a critical area from the standpoint of national defense.

These are only a few of the ramifying aspects of the forest field which the National Security Resources Board will have to face in developing overall plans for both short-term and long-term defense. In the light of the President's message to Congress on March 17, it is to be hoped that the board will make haste rapidly in activating its timber and forest products division.

"Trout Time"—Photograph by Erie Wahleen

CROSSETT—MONUMENT TO PLANNED FORESTRY

By JAMES D. CALLAHAN

ON a December morning in 1901, the first whistle of the Crossett Lumber Company called the first crews to work. This whistle was the culmination of two years of preliminary planning by the three founders of the company—E. S. Crossett, Dr. J. W. Watzek and C. W. Gates. And it was the foresight and practical business sense of these three men which later developed a "perpetual operation plan" and made possible the multiple industries and the community of Crossett, Arkansas, as it is known today.

Crossett today is pretty generally regarded as a monument to planned forestry. Since that December morning nearly half a century ago it has grown from a logging camp in the wilderness to a dynamic town of 6,000 population. The Crossett Lumber Company has blossomed into a major industry, operating in addition to its sawmills a paper mill and a chemical plant. It employs 2,000 men and women—and manages a vast number of acres of forest land in southeastern Arkansas and northern Louisiana.

From a temuporary sawmill site Crossett has become a symbol of permanency. And because of this—and also because of the Crossett Experimental Forest which was established by the U. S. Forest Service on 1,680 acres of land donated by the company in 1934, Crossett has become a magnet for foresters, students and instructors, timberland managers and conservationists (see "Growing Profits in Pine," by S. L. Frost, in March 1946 issue). The experimental area was increased in 1942 when the company leased, at nominal rental, an additional 1,800 acres.

The Yale School of Forestry, in cooperation with the company, has established its "camp" two miles from the town at the site of actual forest operations. Classes of fifteen to twenty-five students spend three months, from March to May each year, receiving instructions in forest management. Special emphasis is placed on field work and solution of problems previously studied in the class-

Crossett, carved out of a pine wilderness by its founders, is living proof that good forestry pays. Aerial view shows the town's pattern with sawmills in the foreground

room. There are also courses in wood utilization at the company's lumber, paper and chemical plants.

The ghosts that took over so many boom and bust lumber towns at the turn of the century will never haunt Crossett, Arkansas. Foresight and a "perpetual operation plan" have seen to this

The story of Crossett follows the usual pattern of early sawmills—up to a certain point. The founders believed that the forests of shortleaf pine and hardwood which spread from southern Arkansas into northern Louisiana would supply sufficient raw material for many years of lumber operations. The first blocks of land were purchased in 1899, and this was followed by the acquisition of smaller woodlands from neighboring farmers. During this period an office was set up in the rear of a barber shop at Hamburg in Ashley County, and for several months the company's agent did a characteristic land office business. Local farmers were appalled at the willingness of this representative to pay good hard money for land then thought to be of little or no value.

One young farmer who had just sold his timber met an acquaintance on the street and called out to him, "Hey, Bill, sold your pine timber yet? No? Well, you'd better come on and get rid of it before this damn fool's money gives out!" But the money did not give out and by the end of the year the company's original land purchase had been considerably expanded.

Soon loggers were busy felling timber to make the clearing for the camp —the future town of Crossett. For at least a year personnel lived in tents, and the output of the first mill went almost entirely into erection of the plant, offices and other necessary buildings. Then dwellings began to appear. Everything in these first years was of a temporary nature because the idea of a sawmill town being permanent had never been heard of. Sawmills came, operated for a number of years and then moved on to more fertile fields, leaving ghost towns in their wake.

But they never moved on at Crossett. The idea of continuous operations soon began to take shape in the minds of the founders. As pioneers in the use of light logging equipment, which did not damage small trees and seedlings, they were quick to realize that these small trees and seedlings furnished a potential source for future crops.

"Why not," the founders asked themselves, "work out a plan whereby sufficient seed trees and small trees can be left standing to furnish a second and perhaps even a third crop?" Thus was born the idea of selective cutting, continual operation, and the growing of trees as a crop. No time was wasted in formulating a definite policy in pursuance of this idea.

Initially, it was decided that no trees under fourteen inches in diameter would be cut, and that several large trees should be left standing on each acre to serve as seed trees. Many called the Crossett plan a pipe dream,

The Crossett Chemical Company, foreground, utilizes sawmill by-products. In the background is the kraft paper mill and acres of pines that insure its continued operation

But Crossett's founders remained immune to this skepticism and time has proved the merit of their "perpetual operation plan."

In order to expedite its plans for continued operation the Crossett Lumber Company hired its first graduate forester in 1922. From this one forester the forestry division has grown into one of the company's largest and most important branches. Fifteen graduate foresters and eighteen technically trained men watch over their charges like a mother hen over her brood of chicks. They decide how much and which trees shall be cut, and are constantly devising new methods of increasing the yield and further protecting the timber against the hazards of fire and other destructive forces. Including administrative and non-technical employees the division employs 105 persons. Plans are under way to enlarge the number of graduate foresters to twenty.

This June a comprehensive aerial survey will be made of the entire area in which there are company-owned stands. This survey will enable company foresters to make accurate maps, and it can be used to some extent in estimating timber. New road construction and future logging operations will be greatly aided by the aerial survey as will fire protection—with fire watchers prepared to pin point the location of forest fires and dispatch men and equipment.

Company manned fire towers are equipped with two-way radio installations. When a fire is spotted, its location and intensity can be radioed to cruising forestry vehicles which are also equipped with two-way radio equipment. The use of radio communication is most effective at Crossett in fire prevention and control as well as enabling the forestry headquarters to keep in constant communication with field operations.

The forestry division has started seedling plantations on prairie land, which had never previously yielded timber. The initial venture, the planting of loblolly pine, which now has reached a ten-year growth, convinced the foresters that pine could be grown on the prairie successfully. As a result, hundreds of additional acres have been planted. And while it is too early to anticipate the yield, there is still some question, because of subsoil conditions, as to whether or not these trees will reach sawlog proportions. However, there is no question as to their value as pulpwood to feed the paper mill at Crossett. This in itself marks the success of the undertaking.

Crossett's founders realized that waste and by-products of sawmilling could be put to constructive use. To accomplish this end an expansion program was inaugurated shortly after the first World War and it is still in progress. In 1923 a modern power plant was erected which not only supplies power to Crossett's industries, but to the town as well. In 1931 the chemical plant was erected, and in 1937 the kraft paper mill.

Typical Crossett home is well-built, comfortable and has a sizeable lot. Hundreds of workers bought the homes they had formerly rented when the company sold them two years ago

The construction of the paper mill and chemical plant was conclusive proof that Crossett's planned forestry program was paying off. People don't build paper mills unless they plan to stay in business. Paper production is one of the most expensive industries from the standpoint of original plant cost, requiring a $17,000 investment for each daily ton of pulp produced. Furthermore, paper mills must be assured a steady constant flow of raw material which can be converted into wood pulp.

Construction is due to begin shortly on a new company research laboratory which will serve as the research center for all phases of work on forest products. Its prime objective will be continuous improvement of present products and reduction of cost to consumers, as well as development of new and better products from wood. An outstanding feature of the new unit will be the pilot plant, in which results from labotatory tests will be carried out on a pilot scale before being transferred to the main plants.

To the townspeople, especially the old-timers, the last semblance of the old temporary sawmill town was removed several years ago when the company offered for sale the houses and retail businesses of the town which had previously been company owned. Hundreds of workers bought the homes they had formerly rented, and many more are waiting to buy as soon as new subdivisions, developed since World War II, are completed. Crossett's thriving business district is now operated by private owners who became as integral a part of Crossett as the sawmill or paper mill workers. Strangely enough, there is no differentiation between those who work for the company and those who do not. They are all members of the Crossett community. Their children go to school together, their wives play bridge and go to P.T.A. together; the men folk all belong to the Junior Chamber of Commerce, the Country Club or the Lions.

In a recent address before veteran workers, P. F. Watzek, Crossett's general manager, said, 'Crossett has prospered and grown over the years. This could not have happened had it not been for all of you. History is written by people and the only assets of real and permanent value included in any organization are the people in it."

Yes, forests and people have prosprospered together at Crossett. And because they have, the ghosts that took over so many boom and bust lumbering towns at the turn of the century will never haunt this Arkansas community.

SEEDING BY HELICOPTER

Johnnie Appleseed would have been amazed to see Pilot Hall hop into his helicopter and seed 1,000 acres in two hours' flying time

By HAROLD OLSON

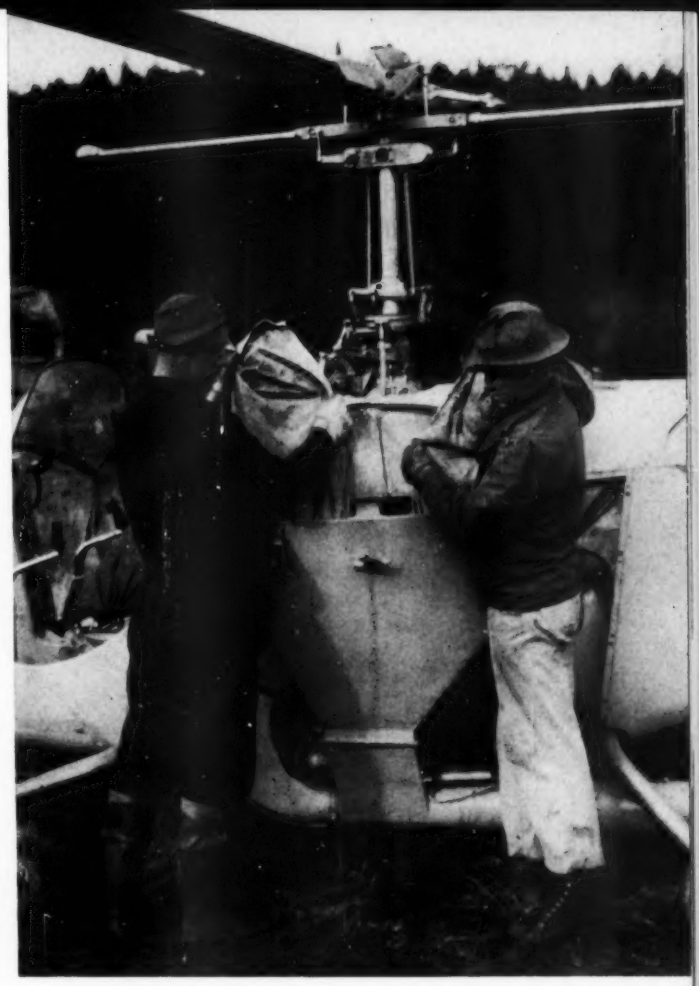
PILOT Tom Hall scored a "first" for the Crown Zellerbach Corporation, producers of pulp and paper, last December 28 when he lifted his helicopter into the air to scatter tree seeds over the Crooked Creek section of Oregon. It marked the first time an "egg beater" had been used for such a purpose in the Pacific Northwest. Rising from a Mist, Oregon, pasture loaded with 300 pounds of western hemlock, Sitka spruce, silver and noble fir and Port-Orford-cedar seeds, the 'copter hovered over canyon and ridge like a big, slow-gaited hummingbird to effectively plaster a 1,000-acre area of the corporation's Columbia tree farm at the rate of three pounds of seed a minute.

Hall's performance was systematic and his coverage excellent. Green cloth spread on the ground at selected points to check seed dispersal caught from nine to twenty-four seeds each the first day of operations. Since each cloth was one-thousandth of an acre in size, a distribution of 9,000 to 24,000 seeds an acre was indicated. The seeds fed from two hoppers, one on each side of the helicopter, into a horizontal tube where they were caught in a powerful air jet and dispersed over baffles that scattered them in a swath. A rotary agitator in the hopper slot kept the seeds flowing into the tube evenly. Inside the expulsion tube an ingenious tell-tale musical device gave Hall the inside "dope" on how the seeds were coming out. Air-driven seeds struck piano wires whose vibrations, transmitted to a tuning fork, were borne by wire to the pilot's head set—warning him when the apparatus was fouled up or when to switch hoppers.

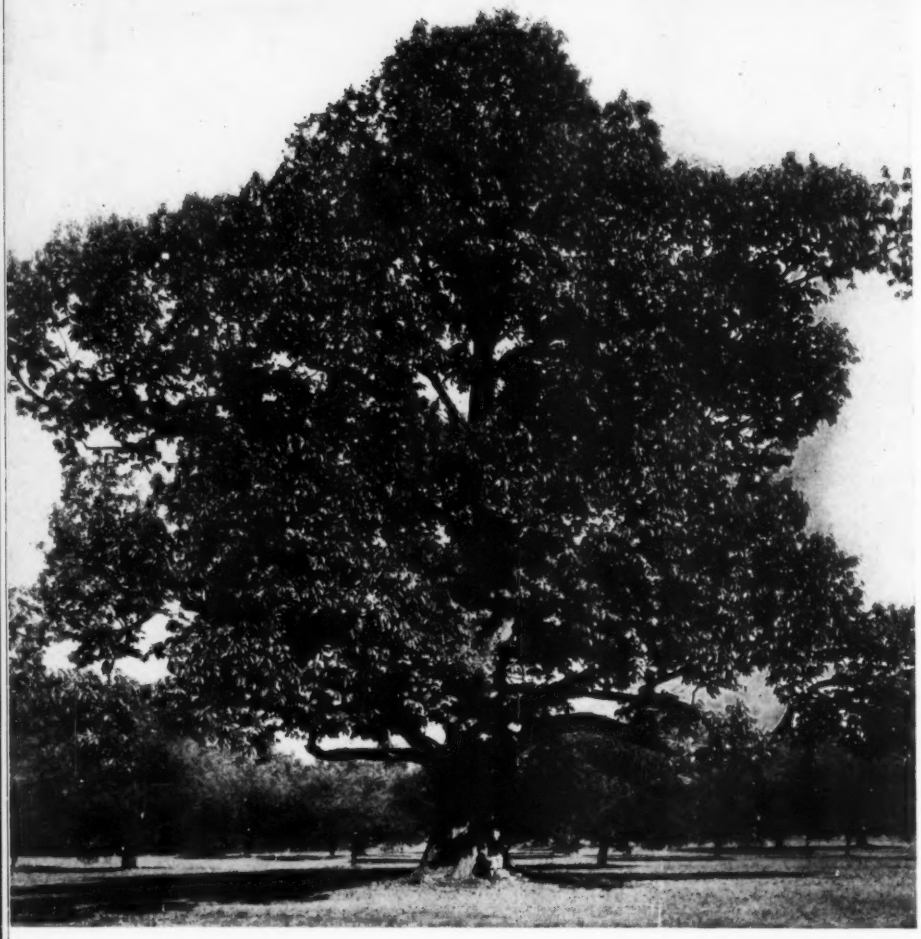
Two pay runs on December 28 and another the following day completed an estimated 2,600-acre operation. About two hours' flying time took care of the first 1,000 acres on the Columbia tree farm. Then Pilot Hall shoved off for Astoria and seeded a 640-acre tract of the Clatsop tree farm. Following that he gave attention to two 500-acre areas on the Cathlamet and Clackamas tree farms.

Crown Zellerbach foresters, with eight timber-growing properties with upwards of 500 thousand acres, have long been air minded. In 1945, Crown teamed forestry with aviation when it joined with the Oregon State Forestry Department to spray 12,000 acres of timber against an outbreak of hemlock loopers. The epidemic was stopped cold. An airplane was then used to seed a portion of the Clatsop tree farm and foresters expect to have information on the effectiveness of the performance by next year.

Last year the company had 2,500 acres under its planting program. Half of this was seeded by helicopter and the other half either hand seeded or planted with young tree stock from the forest industries' nursery at Nisqually, Washington. All in all, it was Crown's largest planting year and part of the organization's plan to build its eight timber growing properties to maximum production.



Helicopter's two hoppers, one on each side, (above) carried 150 pounds of seed each. Below, foresters check coverage on cloth laid to show seed dispersal



REMEMBER THE CHESTNUT!

Though it struck many years ago, the tragedy of America's native chestnut trees lives as a constant warning of what happens when we are unprepared to deal with tree-killing insects and diseases

By AMANDA ULM

DURING the summer of 1904, a number of American chestnut trees in New York City's Zoological Park withered and died. Many attributed the loss to the unusually cold winter of 1903, but Herman Merkel, the park's chief forester, suspected something more. He sprayed the trees with a fungicide and reported his observations to the U. S. Department of Agriculture in Washington. No one became alarmed, however. Chestnuts were plentiful in the woods about the city and there was no evidence of anything wrong outside the Zoological Park.

Yet within seven years it was difficult to find an unblighted American chestnut in the Empire State. And by 1940 healthy specimens of this great tree had virtually disappeared from the woodlands of the East. Only in certain sections of Mississippi and Tennessee were unblighted trees still reported.

To the present generation of young Americans the disappearance of the chestnut from the eastern woodlands is little more than a chapter of history. And to their great misfortune they have been deprived of an association that is still deeply etched in the memory of many of their elders. Henry David Thoreau undoubtedly spoke the minds of many when he wrote of this magnificent tree:

"When chestnuts were ripe I laid up half a bushel for winter. It was very exciting at that season to roam the then boundless chestnut woods . . . with a bag on my shoulder, and a stick to open burs with in my hand . . . amid the rustling of leaves and the loud reproofs of the red squirrels and the jays, whose half-consumed nuts I sometimes stole. . . . Occasionally I climbed and shook the trees. They grew also behind my house, and one large tree which almost overshadowed it was, when in flower, a bouquet which scented the whole neighborhood, but the squirrels and jays got most of its fruit. . . . I relinquished these trees to them and visited the more distant woods composed wholly of chestnut."

Yet the story of the chestnut is one every American should know and ponder. For not only is it a tragic reminder of what can happen to a valuable resource when danger signals are ignored, but it points with millions of dead and ghostly snags, all that is left of one of the most magnificent trees indigenous to our woodlands, to the fallacy of the kind of thinking that adds up to "too little, and too late." And unless the American people and their representatives

in Congress show greater understanding of the destructive power of tree-killing diseases and insects, the tragedy of the chestnut can be re-enacted. The present plight of the American elm is eloquent testimony to this.

The chestnut, of course, was more than a sentimental loss to the nation. A superbly beautiful tree, often towering 100 feet or more in the forest, it was of high commercial value, an important part of the nation's economy. Its wood was durable and rot-resistant, ideal for telephone poles, shipmasts and railroad ties. Great quantities were used for interior woodwork. And as a source of tannic acid it was unsurpassed. Indeed, by the time the blight had moved from New York to Virginia, it was estimated that the loss in timber alone was in excess of $25,000,000.

The tragic part about our attitude toward destructive diseases and insects is that, because they work silently and undramatically, we find it difficult to become greatly concerned until their deadly work is done. Then we lick our wounds, total up our losses, and indignantly ask each other, "Couldn't it have been prevented?"

We are still asking this about the chestnut disaster. The answer, however, is likely to be lost somewhere in this pattern of reasoning: at the time of the outbreak there was little understanding of plant diseases; much valuable time was lost after the outbreak in searching out the factors responsible for the epidemic and in vacillation and acrimonious debate; the disease once established, spread like lightning; and finally the eastern woodlands became so thoroughly permeated that no human control was practical.

When Forester Merkel examined the trees dying in New York's Zoological Park, he found interesting marks on their trunks and branches. A sunken area of dried out bark, a sort of canker, was always present. On the surface of the cankers he frequently saw thousands of yellowish pin-point projections. He immediately sent samples of this material to the Department of Agriculture, which reported that the bark was riddled with a fungus, that the yellow pin points were fruiting bodies, containing millions of spores. When these spores were released from the fruiting bodies they could be blown miles to infect other chestnut trees.

This particular fungus was a deadly parasite. Only one infinitesimal spore lodged in a fissure or slight abrasion of the protective bark of the chestnut could send out minute rows of root-like strands which would expand into a fan-shaped, white or buff-colored mass. The "fan" would penetrate the trunk of the tree, pushing its way into the sapwood. Eventually, the fungus would destroy the cells growing next to the tubular conductors through which water ascends from the tree's roots to its leaves, thus cutting off the tree's water supply. The net result of this interior strangulation was identical with girdling the tree trunk with knife or ax.

Maryland Forestry Department

The gray ghost of a blight-killed American chestnut—this old monarch of the eastern woodlands is magnificent even in death

Despite these revelations regarding the disease, protective action was ineffective. Merkel's attempt to control the spread of the fungus with Bordeaux spray, a lime-sulphur concoction which the French had used successfully in controlling a fungus disease of grape, was a complete failure. So, with nothing to block its progress, the blight, by 1911, had spread from New York to New Hampshire, Connecticut, New Jersey, Pennsylvania, West Virginia and Virginia.

A number of scientists believed the disease would disappear of its own accord, but generally there was rising fear that it would sweep down through the extensive chestnut forests of the South. One of the first real stands made against its march was in Pennsylvania where a Chestnut Tree Blight Commission was cre-

ated with $275,000 at its disposal. Believing the blight controllable, the commission set about making investigations of practical control measures, started research on the peculiarities of the blight fungus, and dispatched 200 scouts to locate and destroy infected trees. Its peak effort was a serious, if not desperate, attempt to establish a ten-mile zone across which, it was hoped, the blight organism would fail to find its way. Within this "immune belt," as it was called, all chestnuts, healthy and diseased, were destroyed.

Previous investigation of the blight fungus revealed that instead of one type of spore, as supposed, the fungus possessed two types. The first, called *ascospore* by the researchers, was produced in microscopic receptacles within the pin-point pustules. Extremely small, it was easily blown by the wind to infect new trees. The second was contained in sticky, yellow ribbons extruded from the pustules more or less as toothpaste is extruded from a tube. These were called *pycnospores*. Being moist, they adhered to the feet and bodies of wild animals and were thus carried considerable distances to other chestnut trees.

This apparent ability of the blight fungus to spread under any conditions played right into the hands of opponents of the "immune belt" theory, who could see no purpose in putting thousands of dollars into what they believed was a lost cause. The result was that two years later the Chestnut Tree Blight Commission ceased control work. Hastening its demise was the failure of a number of other states to cooperate. Later experience has shown that the blight can be kept out of certain localities, and there is reason to believe that elimination of trees in advance of the main progress of the fungus in Pennsylvania deterred the blight by at least five years.

From 1913 on, with practically no human opposition, the blight spores continued to be carried southward and westward.

The severity of the disease made it clear to most investigators that this was no mere flare-up of an indigenous parasite, though a few maintained the pathogen to be a curious mutation of a heretofore harmless fungus. Others believed it had come from European trees imported to this country. In the 80's and 90's of the last century there had been a great wave of interest in commercial chestnut orchards, and large numbers of chestnut trees were brought in from Europe by nurserymen.

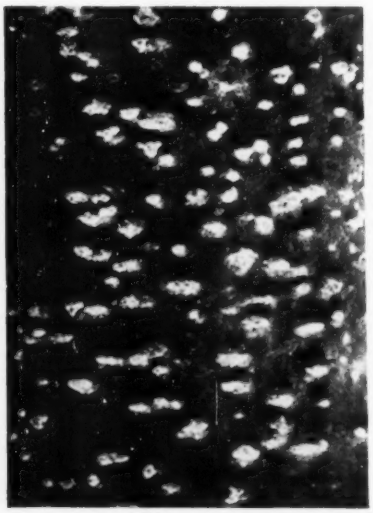
When a fungus, claimed by a number of experts to be identical with the organism causing blight on our native trees, was found on these European chestnuts, the mystery appeared solved. The reasoning was that this fungus, termed *Endothia radicalis*, though apparently harmless to the European chestnut, was deadly to ours. This plausible hypothesis, however, was exploded when it was shown that the European tree, when attacked in this country by the fungus from one of our blighted native chestnuts, also withered and died. Eventually, the two fungi were found to be different, though related. The blight-causing fungus, *Endothia parasitica*, was virulent and definitely fatal in effect. The other was innocuous and attacked only dead tissue.

With Europe eliminated as a source of blight, scientists began to look elsewhere, notably to the Asiatic countries. They began with the Japanese chestnut trees that had been brought into this country in the latter part of the nineteenth century, and it was soon observed that some contained cankers indicating infection from blight. The Japanese tree often survived, however. It was this resistance that gave investigators Haven Metcalf and C. L. Shear the clue they were loking for. Both scientists had become convinced the blight had entered this country from the Orient—but they needed proof.

Dr. Shear's first act was to send a specimen of diseased chestnut bark to Frank Meyer, the famous plant explorer, then in China, who agreed to search for comparative evidence of blight in that country.

The American researchers did not have long to wait. Within a short time Meyer wired that he had found evidence of what he believed to be blight. Three weeks later the Department of Agriculture received a specimen of bark from a Chinese chestnut which Meyer had located in northern China. Metcalf immediately examined the material and reported, "It looks like it." Then Shear found the characteristic *ascospores* in cultures made from the bark. Later the scientist inoculated trees in this country.

Thus, in less than three months, it was definitely established that the



Blight pustules which produced spores easily blown by the wind

Ribbon-like spores adhered to feet of animals, were thus spread

"Fan" of blight fungus killed tree by cutting off water supply

chestnut blight had been introduced from the Orient. Undoubtedly it had come in on Japanese nursery stock during the 90's of the past century. Had it come earlier, the disease would have made its appearance long before 1904. Later, Meyer found blight on Japanese chestnuts growing in Japan. Both the Japanese and Chinese trees are highly resistant to blight.

The virulence of the fungus on the American chestnut is analogous to the effect of tuberculosis on the Indian. In both cases an organism was suddenly introduced to a species which had never had the opportunity to build up resistance. Consequently, in both cases, the havoc was extensive. Fortunately, many Indians survived; unfortunately, not a single infested American chestnut showed even mild resistance.

With the discovery of the blight and the built-up resistance to it by oriental chestnuts, the Department of Agriculture sent botanists to the Orient to select chestnut seeds for planting in this country. This was done, even though at the time it seemed that the oriental trees were in every way inferior, except in resistance, to American chestnuts. The oriental tree appeared to be slow-growing and low-branching. Furthermore, the oriental tree could not be grown under the various conditions in which the native chestnut thrived. They required a warmer climate and more care.

For years there was hope that our native trees would develop a resistant strain. Microscopic studies of the cells of the chestnut revealed that the living tissue of the tree fought the fungus—unsuccessfully, sad to relate—by increasing the width and the strength of the cell walls. What really kept hope alive, however, was discovery that the fungus never entered the roots of the tree—or at least could not survive there. Whether due to the greater amount of tannin in the roots or for other reasons, has not been definitely determined. Anyway, the root crown would continue to live for a while, sending up young shoots which frequently persisted long enough to bear viable nuts.

The hope was that eventually one of these nuts would indicate some change in heredity, a mutation which would bring resistance into the germ plasm of the long-suffering species of native chestnut. But despite numerous trials, none was ever found to be resistant, although many were planted and tested either by natural or artificial inoculation with blight spores. So, at last, it was realized that the American chestnut was doomed.

Selected Chinese chestnut crossed with native chestnut have produced blight resistant trees. Here are some of the hybrids

Revelation that much of the blight-killed timber could be utilized—that chestnut wood infected with blight actually contained more tannin than healthy wood—did not, of course, soften this stunning blow to the American people.

There was nothing to do but find a substitute for the American chestnut—if one could be found. So with the object of combining the best characteristics of the American chestnut with those of the oriental chestnuts, scientists began to cross the two types. Fortunately, they had access to early research. Walter Van Fleet, known especially among gardeners for his rose crosses, had been breeding oriental trees with native chestnuts in New Jersey. Because of this experience, he was selected by the Department of Agriculture to head up chestnut breeding work at Bell, Maryland, where several of his oriental crosses are still in existence.

Luther Burbank was another well-known plant breeder who had been crossing oriental, European, and native chestnuts back in the 90's. A number of Burbank's crosses have found their way to Hamden, Connecticut, where Arthur H. Graves of the Brooklyn Botanic Garden, has been crossing chestnuts since 1930. Graves has been aided in his investigations by the Division of Forest Pathology, but the main breeding work of this division of the Department of Agriculture is still carried on in Maryland.

As early as the 1870's Japanese chestnuts had been imported to this country, and even in colonial days there had been imports of European chestnut seedlings. Therefore, prob-

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April Trout are best!

By HARRY BOTSFORD

AFTER more than four decades of trout fishing, it's my settled opinion that April trout offer more in the way of sport, thrills and genuine hardship than they do in any other month of the year.

Weigh one factor against another: personal discomfort against the size of the creel; physical exertion against the appetite it arouses, the thrills you experience at a time when they are a real balm to a fish-starved soul—and you'll agree that April trout are always out in front.

It's the one time of the year that I return to first principles, as do a lot of other anglers. I do it for two reasons: one is that in the area where I go after trout, it's virtually impossible to use a fly in mid-April because a double-tapered line freezes in the tip guide. The other reason is that I like to catch my share of trout on the opening day of the season.

Otherwise, I suspect I qualify as a strict purist. I use a fly rod and a fly on everything from a blue gill to a musky. And, I've caught and landed a twenty-two-pound musky on a seven-and-a-half foot, four-and-a-half ounce fly rod, too. I quote this just to keep the record clear, not as an alibi.

I've tried using flies on mid-April opening days. I've listened with wide eyes and receptive and credulous ears to tales about fine creels of goodly trout being taken in the midst of a snow storm. I know of no more engaging and entrancing fable. Maybe it's possible. I suspect that it's highly improbable. I know that I never had any luck using a fly when it was cold enough to freeze ice on the little pools at the edge of a stream—and that happens pretty often on opening day in my fishing sector.

Opening day fishing is the breaking of a long fishing fast. Through the long cold days and nights we have had to content ourselves with conversational angling, with long hours before an open fire dreaming and getting our equipment in shape. Anticipation can be a great emotion, but realization has to it a substance that satisfies, regardless of the price we pay for that precious commodity.

Weeks before the Big Day, every plan must be perfected; the boon companions have been carefully briefed and each has specific missions to perform.

My own gang—three of us, a doctor, a lawyer and myself—usually plan on arriving at our little cabin on Kettle Creek about midday of the fourteenth. That gives us a chance to get firmly settled and comfortable.

Doc usually brings along a box filled with lusty angleworms, good old garden hackle. They have reposed close to his furnace during the winter and they have been carefully fed, toughened. Ed claims that the good doctor exercises them at regular intervals. We do know that these worms have great vigor and durability. I bring along a small dip net. I use this in the Allegheny River to

collect a hundred small gray minnows about two inches long, which I prefer to garden hackle.

The little cabin looks lonely and forlorn as we park our car and trailer. The sky is clear, the air is crisp, penetrating. We unlock the door, hastily start a roaring fire in the fireplace. We unload the little trailer, fetch in blankets, food and equipment, make the cabin tidy.

I climb into waders, jump in the car and hurry to the river for my minnows. It's cold work, but in a half hour I'm back with my minnow bucket filled. The fire and the smell of food cooking are inviting.

Doc and Ed have chopped and sawed fireplace wood, enough for several days. The little wood cook stove glows pleasantly. The lamps have been cleaned, filled and lighted, the cabin swept and dusted. It's cheerful and comfortable. The dinner is a delight: a thick ham steak, hashed brown potatoes, stewed tomatoes, hot biscuits and clover honey, a big pot of black coffee and wedges of rich dairy cheese for dessert.

We crawl into our bunks. The log in the fireplace crumbles and sends a shower of golden sparks up the chimney; a vagrant wind tugs elfishly at the windows. I snuggle under the warm blankets and drop into a deep and untroubled sleep.

The alarm clock shrilled and screamed me out of the comfortable bunk. I quickly donned slippers and a bathrobe and kindled the fireplace. It was still dark when I stoked up the little kitchen stove. Then I dressed, started breakfast. When it was well under way I lifted my voice and my companions grumblingly climbed from their bunks, washed and fell to a breakfast of hot corn cakes, smoked country sausage and coffee.

"Cold as the devil out," Doc reported. "We will earn our fish today, believe me."

It was a good prophecy. Old Kettle Creek was fringed with crystal ice and our breaths steamed as we made our way to our favorite starting points. I went donwstream a couple of miles, found a favorite pool and rigged up. My fingers were numb by the time I had lifted out a lively and exceedingly slippery minnow and inserted the tiny wire leader through the mouth and out the vent and I had to warm a hand before I could thread on the vent end of the leader the small double hook that cradled the minnow's tail.

I was using a seven-and-a-half foot, four-and-a-half ounce fly rod, a silk line and a seven-foot tapered leader. I

For pure sport, April trout fishing is tops in the judgment of this seasoned angler. For one thing, it marks the end of a winter-long fishing fast, and the sportsman is all primed for the event

lit my pipe and let the match warm my hands. I paid out line, cast my minnow to the far edge of the pool, let it sink and started to bring it in with snappy twitches of the rod tip, giving the minnow a very life-like appearance. Half way in I detected a lightning flow of color toward my lure and struck quickly and lightly. That's the big advantage of using a minnow rigged in this manner: the second there is a strike, a twitch of the rod makes you fast to your fish if the gods are kind. And you have a lip catch that guarantees your fish can and will fight. My trout wasn't a big one, but he was endowed with energy and he leaped twice before he was netted—a brownie of more than twelve inches. A nice way to start the season!

After that I had a period that was largely luckless. Three small trout were caught and released. One good one got away. More than once I had to clear the tip guide of clogging ice. At last I made the bend, a place where the waters of Kettle Creek turn almost abruptly, forming a deep, narrow pool that swirls endlessly. It had always been a very productive piece of water but it was difficult to fish because it had to be fished from the bank—and there was no cover. The pool was too deep to wade.

Fringing the shore were small pines, about two feet high. Best strategy I had found was to approach the pool with extreme caution and in such a manner as to keep the trout from seeing me. Indian-like I stepped forward, carefully gauging my distance, practically noiseless. I was pretty proud of my effort when something happened. And suddenly! There was a roar at my feet and a cock grouse rocketed angrily into the air, almost into my face. I jumped and yelled—I couldn't help it. I found myself standing and talking to myself right on the rim of the pool.

Well, there wasn't anything I could do. I said appropriate things, decided to make a few practice casts anyway. At the far edge, the light golden water creamed against a big rock, a likely lurking place for a big trout providing he hadn't been scared to death. I let the minnow out in as near a perfect cast as I ever made. Too bad I had frightened every trout in the pool. I swung the lure carelessly through the water. Something stopped its progress and I suspected a hidden log. I was angry and twitched the rod tip sharply.

Wham! It was no log, but a lordly trout and he was not pleased about it. He started places and wouldn't be stopped. The line played out, the little rod arched dangerously. I had to run downstream, hurdling pines and trying to keep my feet. It wasn't easy. At the foot of the pool, he turned and I snubbed in line. When the pressure hit him he leaped a good foot out of the water. A beauty, probably the

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THE ROADSIDES OF TODAY

By MARGARET I. JARDINE

ACCORDING to George Francis Marlowe's "Coaching Roads of Old New England," there were no roads in 1673, when the first post-rider carried the mail from New York to Boston. His adventurous trip, which required two weeks, was along Indian trails, over rough cart roads through small villages, but mostly through wild unbroken forest. The first "public" stagecoach trip was not made until 1772.

Public interest in roadside trees was recorded as early as 1627, when a small Massachusetts town voted "to mark roadside trees," with fines for removal. Another town, in 1655, voted that "there should be trees marked for the shade of cattle in all common highways," and that the tree warden was not to allow any tree cut down "that might show promise of becoming a roadside shade tree."

Thus, the preservation of shade trees, so carefully considered nearly 200 years ago, brings up the question of what we are going to do today, for many of the older trees need replacing, and many new roads are being built.

As time went on, towns and villages grew and cities expanded. Better roads were needed but the old style road prevailed until the advent of the automobile. When modern road machinery went into action, roads were built with little or no regard to existing trees, and the native vegetation on the sides was "bulldozed" into oblivion. There was waste everywhere. Planting new trees wasn't even thought

Roadside planning at its best—The Hutchinson River Parkway in New York (left). Above, twenty-year-old elms on a Rochester, New York, street

John B. Hatcher—U. S. Forest Service

of. Consequently, the smooth wide thoroughfares exposed the luckless motorist to the merciless rays of the blazing sun.

Aside from their many other virtues, trees are of the greatest importance to the health of man as "air-conditioners." They purify the atmosphere by absorbing the carbon dioxide, needed for plant growth, and give off oxygen without which man cannot live. A progressive community will provide the right kind of environment for its citizens, and when the health values of trees is fully understood, people will need no urging to plant trees. They will also see to it that over-zealous road contractors and tree commissioners (and politicians) do not ruthlessly destroy trees.

Progressive cities, such as Minneapolis, Rochester and Philadelphia consider their shade trees a civic asset. The shade trees of Cleveland have an assessed valuation of $7,000,000, while the city of East Orange, New Jersey, values its trees at $3,000,000, or an average of $100 a tree. Individual owners in New York City recently purchased seventy-seven London planes at from $70 to $100 each, knowing that they will increase the value of their property.

It is unfortunate that the taxpayers in many towns and cities are indifferent to their trees, few communities allowing as much as $1,000 a year for their care. As long as shade tree commissioners are chosen by ballot without regard to their training and ability, the public can expect little improvement.

A town that cannot afford a trained forester should turn its trees over to competent tree surgeons on a systematic care basis, which includes feeding. More shade trees die from starvation than from any other cause, and where there is much "cut and fill" in new roads, the water-table is changed. Many trees cannot make the adjustment, and therefore must be fed until established. Systematic pruning has been practiced in Europe for many years, and trees were pruned to keep within bounds. Pruning as practiced in this country amounts to little more than removing dead branches and those interfering with wires.

A number of cities have eliminated certain street trees for various reasons: the birches and locusts because they are short-lived and subject to borers; the willows and ashes because of scale; and the planes from *smaller* streets where their crowded roots have clogged drains and raised sidewalks; the American elm because of the Dutch elm disease and the devastating virus disease, phloem necrosis.

It is significant that in a census taken of damage to trees by ice storms, the above mentioned trees were the most severely injured.

Trees can be pruned "to fit," but why not select the right tree in the first place. Among the things to be considered are the width of the street, soil conditions, atmosphere, and interference with overhead wires. In smoky districts, the London plane and the English elm are the best for wide streets. Other smoke-resisting trees include the European hornbeam, Norway maple, the European littleleaf linden and the tuliptree. The much maligned ailanthus (tree-of-heaven), with its attractive foliage will oblige under the worst possible conditions. Upright forms for narrow streets include the plane, elm, hornbeam, Norway maple, linden and tuliptree, and these should be used more, for they are now available in nurseries. The flowering cherries tend to have narrow pyramidal crowns. Large trees for planting in residential streets and outskirts of cities include: the thornless honeylocust, the ginkgo, or maiden-hair-tree, which makes an attractive avenue tree in Washington, D. C., its upright form *Ginkgo biloba fastigiata* being one of the best for narrow streets, as is the upright beech, *Fagus sylvatica fastigiata.*

The oaks deserve better recognition; they are not slow

Aside from their other virtues, trees are a vital factor in health. Once this is fully realized, Americans will insist they play a more important role in civic planning

growing as is generally supposed, and what is more beautiful than their unfolding pink and red leaves in the spring, or more glorious than their red and scarlet foliage in the autumn. One of our best avenue trees is the eastern red oak, which is planted along the Parkway, near Jamaica Pond, Boston. The pin oak where the soil is not too dry, the scarlet oak and the English oak, with its narrow form, *Quercus robur fastigiata,* are also worthwhile subjects. Further south, the shingle oak and the live oak are used.

Where the air is free from dust and smoke, the sugar maple is one of our best large trees. It has two upright forms. The Schwedler maple is often used. The red maple is satisfactory where moisture is available, and it has a narrow form, *Acer rubrum columnare.* A number of "globe-headed" trees have also been developed, and they are proving satisfactory.

This awe-inspiring drive is probably the ultimate in natural roadside beauty—the Highway of the Giants in California's redwood country near Dyerville

U. S. Forest Service—Hatcher

These are the more common trees, but now that roads and parkways are differently laid out, the choice is much greater. It is better to plant more than one or two species, as some of the mid-western cities can testify, having lost thousands of elms from disease epidemics which literally stripped their streets. Columbus, Ohio, for instance, lost 25,000 trees. Not only have they lost the trees, but the cost of removing dead trees and stumps is appalling.

Lesser known, but promising, are the Amur corktree, the Sakhalin corktree. They are hardy as far north as Boston, tolerant of city conditions and are insect-free. Resembling a small elm is the Keaki or Japanese zelkova which is hardy in the North, graceful in habit, and resistant to sleet storms.

The panicled goldenrain tree, while not hardy north of Massachusetts, is a valuable street tree in the central and mid-western states and southward. With handsome compound foliage, its golden yellow flowers in large terminal panicles are borne in midsummer when little else is in bloom. It thrives in city atmosphere, and withstands heat and drought as well as cold.

The hawthorns are desirable avenue trees, of low-branching spreading habit, and will grow in any soil, with a preference for lime. They have white flowers, except the English species, *Crataegus oxyacantha,* which also has pink and red. More compact, and round-headed is the Washington thorn, while the cockspur thorn is especially recommended for city planting.

The flowering dogwood needs no introduction, its drifts of white "flowers" (really bracts) being followed by clusters of bright red fruits, and the handsome foliage turning in the autumn to brilliant shades of scarlet and crimson.

The flowering cherries cannot be equaled as avenue trees. Being surface-rooting, they are able to thrive in shallow soils and under city conditions. The hardy Sargent cherry has a narrow pyramidal crown, with pink to rose colored flowers in profusion. The Yoshino cherry, whose flowers vary from pink to white, makes a gorgeous display on the banks of the Potomac, in Washington, D. C., each spring, and is hardy from Long Island south.

The Hammond Parkway, at Chestnut Hill, Massachusetts, and the city parks of Rochester, New York, are noted for their flowering crabapples. They will grow wherever the common apple does, and are not particular about soil. Of the white flowering varieties, the Manchurian crab is one of the largest, while the pygmy of the family, the Sargent crab, of spreading habit and rarely exceeding seven feet, is useful on slopes. The cutleaf crab has showy red, yellow-cheeked fruit. The Zumi crab has rosy pink buds and pure white flowers. Good pink varieties include: the Arnold crab, the Chinese flowering crab and the Japanese flowering crab, while the deepest pink is Carmine Crab. Betchel's crab and the Charlotte crab are double pink varieties.

The cucumbertree is a useful roadside tree, and also the white-flowered southern magnolia, from Washington to St. Louis and southward, while the city of Rochester, New York, is famous for its boulevard of round-topped saucer magnolia.

Our super-highways are planned and laid out by engineers and landscape architects, and are therefore worthy of our consideration. What they have carried out on a large scale we, as public-spirited citizens, can do in a smaller way. The principles are the same.

The Connecticut Highway Commission has always advocated the use of native planting, and the Merritt Parkway, commencing at the New York line and ending at Milford, is a noteworthy example. Large trees that can be saved are marked for special protection before construction is started, and therefore are already in place upon completion, and contributing to the landscape effect. The highways, although separate units in themselves, quickly merge into the surrounding countryside to become a part of it. Characteristic of the Connecticut hillsides are the eastern redcedars, singly or in groups, while snowy white drifts of dogwood blossoms show up against a background of darker foliage. In June, the mountain laurel is the most beautiful spectacle of all, with its "calico" flowers of pink and white. Huge oaks dominate the landscape at intervals, and the sides of the roads are covered with sweetfern, wild roses and other attractive ground covers.

The new Wilbur Cross Parkway, which adjoins the Merritt Parkway, is in the process of construction, and should be finished by the end of 1949. Upon completion of this cross-state Connecticut parkway, it will be possible to drive all the way from New York City to the Massachusetts line by super-highway. It will cut off many miles of travel, eliminate cross-traffic, and cut out city traffic congestion. Planting similar to the Merritt Parkway and in harmony with the countryside will quickly soften the harsh lines of construction and the

(*Turn to page* 187)

MY FAVORITE TREE

By DOROTHY CANFIELD FISHER

Famous Novelist

THE white pine for this old Vermonter! To see the way the seedlings grow, shooting up, strong and vigorous and beautiful from poor soil where other trees would starve, to see how their shade and their fallen needles protect the soil from drought and fatal erosion, to see a grove of them stand, glorious as a temple, beneficent as guardian angels to the piece of Mother Earth they cover — it is to see a miracle.

COCK-OF-THE-WOODS

By LLOYD SCHERER, JR.

UP THROUGH the ancient hardwoods of the timbered slope poured a loud, full-throated series of clear identical notes. I paused, recognizing the wild cry of the pileated woodpecker — that great, crow-size member of the woodpecker clan.

While I waited, the big vigorous bird flew into sight, flashing its white-centered, black-bordered wings, which spread across two and a half feet of space, and pulled up to an abrupt halt on a dead snag.

Lifting my binoculars toward the perch, more than fifty yards away, I spotted the oversize woodpecker, largest species in North America except the rare ivorybill. Sitting stiffly on the snag, he scowled at me with obvious distrust, his eyes suspicious under his flaming upswept crest.

Most species of woodpecker display some degree of red upon the head, but the pileated's unique upshot crown outdoes all smaller members, and sets off his enormous form with a jaunty, ludicrous aspect.

The width of his red cap identified the bird as a male; his mate would have exposed less color. Also he sported an extra shaft of red from the base of his long, chisel-like beak to his duck-like neck. Otherwise his color, like the female, remained basically black, marked with three white bands across his face, the center band broadening and following the side of his curving neck to eventually disappear beneath a wing. His plump body tapered to a stiffened tail that he used as a prop against the tree trunk.

The snag was an odd-looking one —odd because the giant woodpecker had been there before. Several cavities, one three or four feet high and nearly wide enough to have admitted my head, yawned on the rotting tree's side. The bird had chiseled out these to obtain food, probably wood-boring larvae that no smaller woodpecker could have reached. In examining the ground afterwards I found a pile of chips containing pieces up to the size of my palm.

First, however, I tried to stalk nearer the wonderful bird but he was too wary for me. Launching into the air he displayed all his glorious, wild beauty, and shattered the woodland with his voluminous "*qua, qua, qua, qua, qua!*"

That is the way of pileateds in settled districts. Guns have thinned their numbers and taught them to recognize their worst enemy — man. They have no way of distinguishing between the unscrupulous gunner who seeks any living target and the discriminating sportsman who wants only legitimate game.

Wherever this large, showy tree-hammerer exists, its fascinating behavior provides some of the best unscheduled entertainment that the outdoorsman will meet.

In wilder regions I have enjoyed the privilege of watching a magnificent pileated woodpecker explore the tree bases only a few yards from my feet, and the bird seemed as little concerned over my nearness as it would over the harmless white-tailed deer to which it is accustomed.

This extraordinary bird ranges from the cypress and gum forests of Florida and the Gulf States to the spruce and birch of the Canadian North Woods from Nova Scotia to far-flung Mackenzie. Although absent from the Great Plains and much of the Rocky Mountains, he drums the trees in many parts of the Cascade and Sierra Nevada mountains from southern British Columbia far down into California. Although he is a conspicuous bird, and possesses a monstrous voice, many persons living close to his haunts remain unaware of his existence simply because they never wander into his woods.

He doesn't migrate; and in winter when snowshoeing through the hushed, sub-zero northern forest I have met him at work drilling for insects as merrily as on a balmy summer day.

Not everywhere is he known by the standard name — "pileated woodpecker." In various localities he has received the titles "log-cock," "cock-of-the-woods," "Great God woodpecker," "Indian hen," and "woodcock." The term "woodcock" has proved a misfortune to him; for during the open season on the real woodcock he has been shot by uninformed persons who thought they were taking legal game. And inasmuch as each pair of pileateds requires a wide range of territory all to itself, and its

(*Turn to page* 188)

Rather than carry food, pileated parents jab their long bills down the throats of their young and regurgitate the needs of the hour

Samuel A. Grimes—NAS

When A Stream Runs Wild

In Mount Rainier National Park they are still talking about the Kautz Creek flood. A glacier overran the serene little stream and the countryside will never look the same again

By ROBERT K. WELDON

TO anyone who believes that sudden, large-scale erosive earth forces have long since stopped, the story of Kautz Creek in Mount Rainier National Park, Washington, should be revealing. Ordinarily a calm, clear stream flowing from the terminal points of glaciers on this great mountain, Kautz Creek suddenly went berserk last October and left park rangers and other witnesses awed by perhaps the most dynamic natural phenomenon observed in the national parks in many years.

Before this particular October day, the channel of Kautz Creek was generally narrow, having the appearance of a more gentle stream issuing from snow banks or springs rather than from living glaciers. Within the memory of the oldest residents of the region the creek had flowed serenely among old glacial boulders and heavy forests of Douglasfir, hemlock and western redcedar. Along its course were ideal trout pools.

Then, with practically no warning, Kautz Creek went wild. In the short span of two days the stream, in flood, not only changed its peaceful character to one of extreme turbulence, but altered the typography of much of its watershed.

It deposited in the lower valley sections and adjacent forest areas enough glacial material, boulders, logs, sand and silt to cover a square mile to a depth of forty-two feet. A half mile section of the park entrance road was covered with from three to twenty feet of debris. To move this huge quantity of glacial materials, Kautz Creek expended power equal to ten times the ultimate development at Grand Coulee dam! Or put another way, the water power developed was about equal to 8,000 fire hose streams concentrated in one stream.

Fortunately Kautz Creek flowed through an uninhabited valley. But it did blot out the entrance road to Longmire, where park headquarters are located, and the little community of 150 people was isolated, except for an old and little used logging road, for almost a month. No human values were altered—but topographic values were, and the humans who witnessed the flood will never forget its dreadful, awesome aspects.

During one of the heavy surges Douglasfir trees three feet or more in diameter were snapped off or bowled over as easily as a kid knocking down a house of blocks. The noise of grinding boulders, falling trees and the accompanying shaking of the earth in the vicinity of the flooded area was frightening. Only occasionally in a lifetime, if at all, are such things observed by man at the time they happen.

Rangers who hiked to high areas to see the upper portions of the creek came back with stories of new canyons, scenery changing in aspect.

Gazing down from a high point into the canyon of Kautz Glacier, a ranger familiar with the old scene felt lost. Nothing was the same. Almost a mile of the glacier was gone, only ice remnants remaining high on the sides of a new canyon. New cliffs and headwalls had been carved from the volcanic rock and down in the canyon where once was ice, muddy, turbulent Kautz Creek now angrily flowed on the original granite, unable at last to cut deeper. The new canyon at this point of elevation,

Where the flood spread destruction over the Nisqually entrance road to the park

Grater

about 5,300 feet, was estimated to be 300 feet deep and up to 900 feet wide.

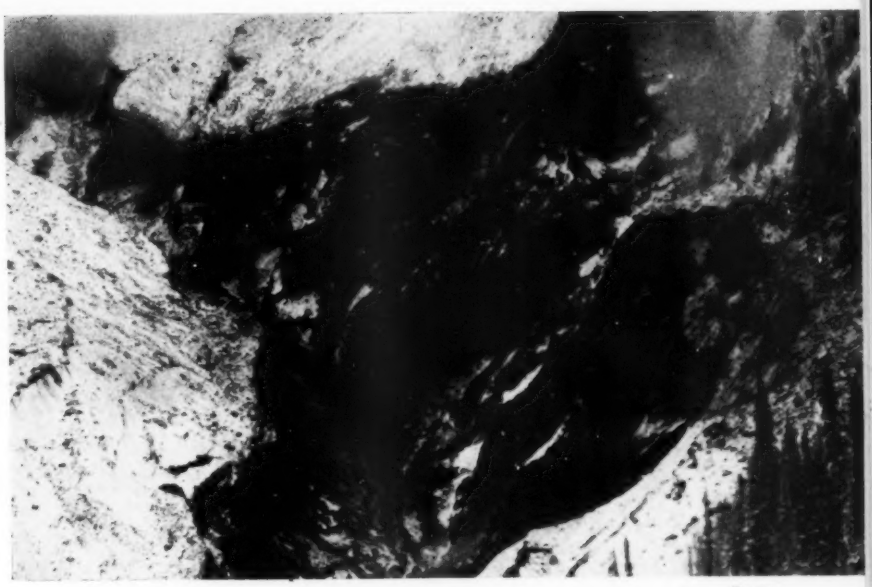
Farther below this section was a narrow stretch where the creek used to run through a box canyon. All was changed here. Its course was entirely different. Trees had been uprooted and piled like jackstraws in the woods. The new channel was about sixty feet deep. Another two miles and the canyon became shallow, the stream spread out, and finally were the areas of fan-shaped deposition of material. Blocks of ice were found along the upper canyon stretches two weeks after the flood.

How did all this happen? The stage was set when heavy rains occurred, not only at Longmire, but at much higher elevations. Paradise Valley, at 5,557 feet, for example, had over five inches in twenty-four hours. Even heavier rainfall, probably of cloudburst proportions, is believed to have fallen on the upper watershed of Kautz Creek.

So the stream was already high when the sudden downpour raced water of unknown volume down the glacier, carving out sections of the terminal areas of ice and rock debris. This material ground down the moraine of huge boulders, smaller rocks, sand and fine "glacial flour," and the whole was rushed down until it reached the narrow box canyon section of the creek. Here, it is believed, the canyon was blocked and the water and debris held back. Not for long, however. The tremendous pressure above broke the whole mass loose and down it came, sweeping in a surge of infinite power. This happened, perhaps, in greater or less degree several times during the two days of flood, with the disastrous results recounted here.

A few days after the flood, rangers, observing the upper sections of the new Kautz canyon where the glacier used to be, saw the same thing happening on a lesser scale. The new, steep, unstable walls of morainal material were continually crumbling down into the creek. Sometimes the watchers high above the canyon heard a frightening rumble as tons of material came thundering down. All would be quiet for a period of minutes and then the mass, which had dammed up considerable water, would be broken loose in the channel by pressure from above, and down it would grind and roar in a muddy torrent, a lesser demonstration of the original earth-moving mannerisms.

Only the cold weather and snow of winter tamed Kautz Creek. The first chapter of the book is written,



Grater

Kautz Creek after a mile of glacier had been gouged out (dark area). Stream in canyon bottom now flows over original granite

Grater

During one of the heavy flood surges trees three feet or more in diameter were bowled over and piled like jackstraws

but there will be others when thaws and heavy rains come this spring.

Since it is the policy of the National Park Service to preserve all natural features within park boundaries in as near a natural state as possible, natural disasters are as much a part of the native scene as beautiful scenery. The Kautz Creek flood area is a demonstration in place of the power natural forces possess. And its present and future study will reveal many hitherto unknown geological and ecological facts. For this reason the area becomes a natural exhibit of great interest.

The Kautz Creek flood will never be forgotten by those who witnessed it. And something of the drama will be captured by those who visit Mount Rainier National Park in the future and look upon the evidence of the vast earth changing power of one little innocent, glacial creek.

WILDERNESS VACATION

Expeditions into new areas announced for Trail Riders of the Wilderness

FOR the first time since the war, Trail Riders of the Wilderness will offer members of The American Forestry Association a full schedule of wilderness vacations. Two pioneering expeditions, into areas never before visited by the Trail Riders, will operate in August.

Highlights of the ten-expedition season will be the Eagle Cap Wilderness Expedition in Oregon, and the Cascade Crest Wilderness Expedition in Washington.

The Eagle Cap Wilderness group will explore parts of the Wallowa and Whitman national forests, primarily in the Eagle Cap Primitive Area. This is a country of meadowed mountains, rugged peaks, high-lying lakes and interesting geological formations and some of the best trout fishing in eastern Oregon. Starting on August 5 from La Grande, Oregon, the party will take to horses at Moss Springs on the Whitman forest, and on August 16 will come out of the wilderness at Wallowa Lake after twelve days of travel in the country of elk, mule deer and bear.

Headquarters for the Cascade Crest expedition will be the Double K Ranch at Goose Prairie, Washington, on the edge of the Snoqualmie National Forest. Ascending to the crest of the Cascades on the first day of the expedition, the party will follow the crest, with Mt. Rainier to the west, on southward to the Goat Rocks Primitive Area. At Goat Rocks, beyond which the trail is impassable even for Trail Riders, Mt. Adams towers in the sky. The expedition combines forests of fir, pine and hemlock with rugged rocky peaks and snow caps and mountain lakes and rushing streams. Tentative dates are from August 19 to August 31.

These pioneering expeditions are being organized in response to requests for new areas by many veteran Trail Riders. The dates are arranged so that riders may be able to go on both expeditions while in the Northwest. Although not limited to veteran riders, the expeditions doubtless will be the scenes of many reunions. Held during the dry season of warm days and cool nights, they will give riders ample opportunity to sleep beneath a canopy of stars instead of tent or tepee.

Another highlight of the year will be a return to the thrilling expedition in the High Sierra of California. The itinerary will be essentially that of the 1938 pioneering expedition. Starting near Bishop, the party will ride the crest of the Sierra to the summit of Mt. Whitney, highest moun-

tain in continental United States, with Owens Valley spreading out 10,000 feet below. Then, off the face of Whitney in a breath-taking ride long to be remembered. This expedition will be run in late August or early September.

Expeditions which have always proved popular among Trail Riders are the Flathead-Sun River Wilderness in Montana, the Sawtooth Wilderness in Idaho, the Maroon Bells-Snowmass Wilderness and the Flat Tops Wilderness in Colorado. Each of these expeditions will be repeated in 1948.

The Flathead-Sun River Wilderness was the scene of the first expedition of Trail Riders back in 1933. This million acres of bold mountain beauty, sparkling lakes, dark canyons and flowered valleys will again share its treasures with the riders from July 5 to July 16 and from July 16 to July 27.

The Sawtooth Wilderness in the Sawtooth and Boise national forests of Idaho is a roadless domain in which is cradled the headwaters of the Wood, Salmon and South Boise rivers. Two expeditions will enter the Sawtooth country. The first party will ride from July 27 to August 6; the second, from August 10 to August 20.

In the Maroon Bells-Snowmass Wilderness of the White River and Gunnison national forests in Colorado, the rugged grandeur of the tsate reaches its dramatic height. A land of towering peaks, alpine lakes and tumbling mountain streams, it was first entered by Trail Riders in 1938. Tentative dates for this year's expedition are August 2 to August 14.

A new type expedition was inaugurated in the Flat Tops Wilderness of the White River National Forest in Colorado in 1947. Operating from a base camp at Island Lakes deep in the country of hospitable wilderness charm, alpine meadows, broad forested valleys and flat broken peaks, the riders sallied forth daily on expeditions to explore outstanding features of the high Rockies. Similar arrangements are being made for 1948. Tentative dates are July 12 to July 19, and July 20 to July 27.

Until 1933, when the Trail Riders of the Wilderness was first organized, such vacation spots were known only to a favored few.

Now these little kingdoms of the wilderness, beyond all roads, uninhabited and unchanged, are within the reach of any man or woman with average outdoor experience. Through the Trail Riders of the Wilderness, members of The American Forestry Association are able to scorn the beaten path of the ordinary summer vacation to ride the trail of the little-known back country, discovering for themselves the priceless solitude and the grandeur of the magnificent wilderness that was once America.

The purpose of the annual wilderness expeditions is to provide simple and inexpensive vacations for persons who do not have the time, the money, or the experience necessary to undertake such adventures on their own. The Association serves as the agency to guide, to plan and to organize exploring parties in cooperation with the U. S. Forest Service and the National Park Service—the two federal agencies responsible for the administration and protection of the larger remnants of the primitive.

Since 1933, Trail Riders have participated in sixty-five expeditions in the major wilderness areas of ten states. They have explored almost 8,000 miles of trail in wild country.

This year, with most of the peoples of the world consumed with the threats of war, it is only natural that many should seek the avenues of peace found in intimate association with the greatest of all creations—the unspoiled outdoors. As a consequence the demands upon Trail Riders of the Wilderness organization are great. More persons are seeking vacation spots away—far away—from the nearest telephone, radio, newspaper and honking automobile horn.

U. S. Forest Service
Trapper's Lake in Colorado's Flat Tops Wilderness

U. S. Forest Service
In the Flathead-Sun River Wilderness in Montana

Northern Pacific Ry.
Mount Rainier, along the Cascade Crest in Washington

U. S. Forest Service
In the heart of Idaho's famous Sawtooth Wilderness

WOODLANDS OF KANSAS

By JOHN B. WOODS

AS EVERY STUDENT of American history knows, Kansas was once a part of the Louisiana Purchase, was settled and fought over before the Civil War, knew the turbulence of cattle driving and railroad building days, and finally developed into a broad empire of highly productive farms and ranches with a unique and notable culture. It is nearly flat, and someone has remarked that when the white men first looked upon the territory it was underlaid with coal and overlaid with grass.

Early comers to this vast buffalo pasture found hardwoods along the rivers, and in the well-watered eastern section, woodlands were rather widely distributed. In fact, it was generally believed that only forest land was really worth farming. After the alluvial valleys had been taken up settlers went perforce to the prairies, and soon demonstrated that when moisture conditions were normal they could farm the grasslands, aided materially by such developments as windmills to supply water for people and livestock, barbed wire fencing and railroads for hauling.

Planting mined-over land to ponderosa pine and black walnut has proved profitable in Kansas

J. W. Spencer

Originally, forests covered probably 8.5 percent of the area of Kansas, a matter of 4,500,000 acres or less. By 1865, so much of this natural forest had been cleared that the legislature took steps to encourage tree planting, passing an act that provided a bounty of fifty cents an acre to any person who planted and cultivated five or more acres of trees. The bounty was to be paid annually out of the treasury of the county in which the planting was done, for a term of twenty-five years beginning two years after the trees were set out. In 1868 the law was amended to increase the bounty to two dollars an acre, and to add a special award of a similar amount for each half mile of trees planted along any public highway not more than a rod apart and cultivated and protected for three years. After still further liberalizing amendments the law was repealed in 1874.

Another incentive to planting trees in Kansas was the federal timber culture act of 1873, providing that a person might obtain title to 160 acres of public land by planting trees not more than twelve feet apart on forty acres. This acreage was reduced to ten by Congress in 1878, and thereafter business picked up. More than two million acres of land was patented in Kansas under this law. According to E. R. Ware and Lloyd F. Smith, of Kansas State College of Agriculture and Applied Science, one-eighth of the tree-claim plantings were still in evidence on the ground, and one-twentieth of the original plantings remained timbered in 1936.

Settlers on the open prairie soon came to desire windbreaks or shelterbelts, so that a total of 175,023 acres had been planted by 1908. Since that time new plantations have just about kept abreast of natural losses from old age and drought. Notwithstanding federal aid in supplying trees for planting, and the widely disseminated advice to landowners regarding the value of shelterbelts, recent private

U. S. Forest Service

While shelterbelt plantings like the one above have done much for Kansas, forestry programs of a state-wide nature have not been greeted with any great enthusiasm

plantings show marked reduction of size from the earlier efforts. High tide of overall acreage planted was in the 1880's, a matter of nearly 50,000 acres. Nowadays, yearly plantings amount to a few thousand acres, including the shelterbelt work, about which more later.

According to Ware and Smith, the entire forested acreage in Kansas stood at about 1,238,000, or 2.4 percent of the state's area, in 1936. Of this, 87 percent, or 1,073,000 acres, was natural woodland preserved or regrown from the primeval cover, while 165,000 acres, or 13 percent, was planted stands deemed worthy of mention. At that time they estimated that planted lands supported 78,840 cubic feet of wood, and that natural forests bore 1,332,080 cubic feet. Old-growth sawtimber was standing upon 386,500 acres, second growth was upon 109,700, cordwood characterized 497,800 acres, and 79,000 acres was classed as restocking, meaning that only small trees were abundant. It was their opinion that the total sawtimber volume amounted to 2,416,800,000 board feet.

Ten years later the U. S. Forest Service and The American Forestry Association took another look at the trees growing in Kansas. Instead of decreasing, the volume appears to have increased slightly. Today's estimated total is 2,880,000,000 board feet of sawtimber, of which 2,400,000,000 board feet is operable. Also there is smaller material to the amount of 350,000 cords. Sawtimber is made up of nearly equal volumes of oaks, elms and cottonwood, aggregating about 1,800,000,000 board feet. Other species, such as black walnut (much planted and highly successful), hackberry, various species of ash and hickory are present in considerable volume. There are practically no native conifers except redcedar, but a few others have been planted, notably ponderosa pine, which is doing remarkably well in the mining region. Because of long experimentation with planting, Kansas has a variety of species that compares favorably with most other states.

Except for one state forest of 3,000 acres, twenty-five state parks, and many small but scattered shelterbelts about schoolhouses and other public places, Kansas woodlands are privately owned, almost entirely by farmers. The state parks, aggregating 15,000 acres or more, contain a number of plantations, and undoubtedly would be greatly improved for public enjoyment if more planting were to be done. Nearly 46,000 people own the private woodlands, of which no single ownership is as much as 5,000 acres, and most are less than 20 acres.

Timber utilization has been chiefly in three categories: lumber, fence posts and fuel. Normally the state uses nearly 400 million board feet of hardwood lumber, producing only about five percent of such a volume. Besides rough construction timber and lumber the chief item of current output is black walnut, a valuable and highly prized product which comprises about a fourth of yearly production. Five to six million fence posts are produced in normal years, as against a yearly demand of about 7,000,000. Most of these posts are made from oaks, but a few still come from native redcedar. Fuelwood demand of around a million cords annually is met almost entirely from local sources. Wood consumption would be greater were not coal and oil readily available and cheap.

In southeastern Kansas there is a coal field which for many years was highly productive of steam coal. At first in deep shafts and later by stripping, the producers have worked steadily at removing one valuable natural resource and in the process have set up a problem that is by way of being solved through reforestation and the growing of a second resource.

It is interesting and instructive to quote from a description of planting upon stripped lands, by John W. Spencer, now regional forester, U. S. Forest Service, at Denver. The following was written in 1940.

"This operation (strip mining) is largely mechanical, employing gigantic electric shovels which strip off the entire surface covering and expose the coal. After the coal is removed from one strip the big shovels throw the refuse back in the trench and start a new swath. This refuse is a jumbled mass of top soil, clay, slate and other rock all intermingled. After an area has been stripped it looks much like a roughly plowed field with gigantic ridges and furrows, some of them sixty feet high.

"This stripped land, totaling around 14,000 acres, is worthless for agriculture or for human occupancy. At first the pits are covered with a tangled growth of weeds and wild blackberry vines, but later on weed trees such as cottonwood, soft maple, white elm and bird cherry come in, forming a dense jungle of unmerchantable timber. It is interesting to note, however, that studies made of these trees show that growth is more rapid than on undisturbed lands in the immediate vicinity. In 1933, when the Civilian Conservation Corps was created, Kansas saw an opportunity to do something with these waste areas. The State Forestry, Fish and Game Commission, and the federal Forest Service cooperated to reclaim some of them with C. C. C. labor.

"The commission induced a number of the more public spirited coal companies to donate their worked-out lands to the state for public purposes. The best public use was felt to be conversion of the lands into forests which would promise at least some future return from forest products, and which at the same time could be used for recreation and for small game preserves. The commission also assumed the obligation of maintenance and care of these lands, to be financed from the sale of hunting and fishing licenses. The Forest Service, with three C. C. C. companies, was to supervise the projects.

"The first step was to level the mine dumps sufficiently to break down the ridge tops and convert the areas into a rolling terrain. . . . In the late fall of each year crews were put to work planting trees on the leveled areas. All planting was by direct seeding, the nuts of black walnut, white hickory, bur oak and pecans being used. . . .

"The results of the work to date give every reason to believe that it is entirely practical to establish black walnut on these coal dumps."

Mr. Spencer goes on to explain that pits, hollows and turning rows which filled up naturally with ground water and formed ponds were carefully preserved and stocked with suitable species of fish. Korean lespedeza and yellow sweet clover were planted upon the slopes as well, partly to improve soil fertility, but also to provide feed for upland game birds. In short, the area has become valuable as a mecca for sportsmen and nature lovers, and in time will produce valuable wood for commercial use. Various people have suggested that the state should acquire all the remaining areas of this character in the coal region and develop them in similar manner.

Brief mention has been made already of the shelterbelt or prairie planting project, undertaken in 1935 by the federal government for the main purpose of ameliorating the severe conditions surrounding agriculture in the prairie states, and showing the way to avoidance of dust bowls in the future through planting of strips of trees around farms and along highways in strategic places.

A shelterbelt area was designated, extending from Canada down across the prairie states. About 100 miles in overall width, it passed well to westward of Salina but east of Dodge City. Between 1935 and 1943, no fewer than 5,960 such belts were planted in this state, having a mileage of 3,540, and an average width of probably 80 to 100 feet. From one to 23 rows of trees of various species composed each belt. A study made in 1944 by Dr. Edward Munns of the Forest Service, disclosed that in Kansas 94.8 percent of all the shelterbelts planted had survived in "fair or better" condition.

While the shelterbelt project was successful as an operation, and continues to be valuable as a means of promoting interest in farm and roadside planting, its present status is none too encouraging to advocates of farm improvement through tree growing. Planting by private owners, even when trees are provided from public sources, appears to be about static, while care and improvement of existing belts are declining. The Soil Conservation Service and other federal agencies might profitably join forces to revitalize this activity in all its necessary phases.

Ten years ago the yearly growth of sawtimber-size material was estimated as 94,757,000 board feet, of which two-thirds occurred in existing sawtimber stands. The sought after black walnut adds upwards of 7,000,000 board feet annually. For the most part planted stands contain little material of sawtimber size at present, partly because of lack of cultural operations in the older plantings, and partly because so many of these plantations are young. While the current growth of all sizes of wood probably exceeds annual drain, the situation does not justify complacency, because neither growth nor drain is as great as it might be if the woodlands were better managed.

Forest fire is not a serious problem in the Sunflower State. Thus one of the common incentives to development of state forestry agencies has been lacking here. There is some damage to shelter stands from grazing, as well as some prevention of reproduction. Insects and disease are present but the toll they take is probably less than that of drought during dry cycles.

It is probably true that Kansas, like most other prairie regions, has regarded its forests rather as shade and shelter for farming and cattle raising than as a plant for producing commercial wood. This is indicated by the apparent widespread lack of interest in woodland cultural operations, such as thinning or planting gaps in existing stands. A few years ago there was proposed a state forestry program with several interesting points. More planting activity was demanded, with particular attention to erosion control through tree planting upon steep slopes and flood lands. State forests and parks were proposed, not only upon worked out coal lands but elsewhere in the state. Research in products utilization as well as in planting, and education of landowners by extension methods were emphasized as essential. Altogether it was a good program, and should be adopted and pushed along.

(Note: Bulletin 285 of the Agricultural Experiment Station, Kansas State College of Agriculture and Applied Science, by E. R. Ware and Lloyd F. Smith (1939) bore the title which has been appropriated by the present writer for two reasons: first because it is highly suitable, and second because the work of these two men has been heavily drawn upon for background material.)

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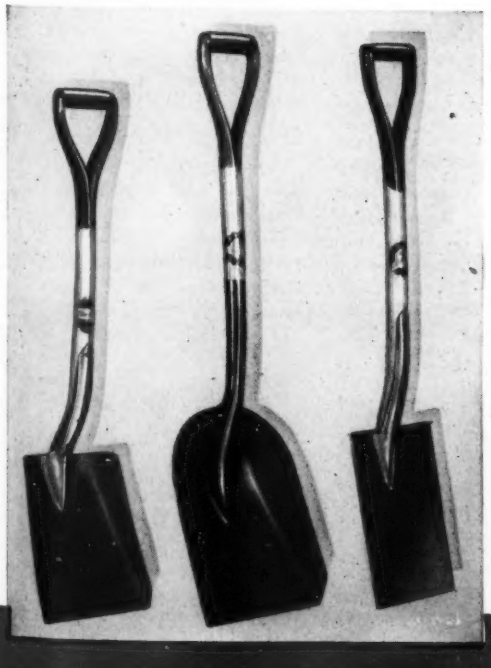

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STUMP RANCH BUILDS JOBS AND HOMES

A family forest enterprise results from seeing the value in cutover Douglasfir stands of southwestern Washington

When his neighbors were filing homestead claims on virgin timberland with volumes of from ten to twelve million board feet a quarter section, Harry Gardner homesteaded 160 acres of young Douglasfir. That was in 1912, and Harry's friends wondered at the wisdom of his selection. The twenty-year-old Douglasfir was not marketable, while their lands with good merchantable timber promised to yield a fortune in a short time. There was only one possible "hitch" to their homesteads—some of the land belonged to the railroads, but it was confidently expected that it would revert to the federal government.

Harry's foresight became evident when the railroad lands were kept by the railroads and many of his neighbors lost their virgin stands through heavy taxes or forced sales. Harry's brush land was assessed at the minimum tax rate and he was able to hold on to his growing asset.

In 1921 and 1922 the economic depression caused Harry to seek a purchaser for his timberland, which he thought should bring him at least $2,500. But the large lumber company that had acquired land adjoining his "stump ranch" near Toutle, Washington, was not interested. So, Harry held on.

The growing interest in forest land became evident to Harry Gardner when he tried to buy some cutover land in the late 30's. The lumber company which had logged it said simply, "It's not for sale!"

By 1945 his timber was large enough to attract attention. Then the lumber company came to Harry. He was able to make a deal which netted him considerable cash and 600 acres of logged-off land in a trade for his 160 acres. Once more he became a stump rancher.

His newly acquired 600 acres had been logged in the early 30's, and was fairly well restocked with Douglasfir, five to ten years old, some hemlock and cedar and a few odd corners of merchantable hardwoods. In addition, the area was littered with snags, windfalls and logs left as culls by the lumbermen. Harry believed he had the makings of a forestry enterprise, and he called in Heath Hall, farm forester for Cowlitz County, to confirm his opinion and to help him plan operations.

A preliminary check of his timberland by the farm forester indicated some hardwoods and a large amount of softwoods which could be salvaged and marketed. Gardner's three sons had just returned from military service and were ready to go to work, as was a brother-in-law. With Harry's nest egg of cash received in the trade with the lumber company and with $600 additional from the sale of old-growth stumpage and from one-and-a-half acres of his father's homestead they purchased enough equipment to start operations.

From four-and-a-half acres of bottomland the five men harvested and sold $12,000 worth of alder and cottonwood. By this time they were well enough organized to tackle the salvage job. First they thinned out five acres of the old growth on the family homestead, placing 400 twenty-five foot poles on the export market at $1.75 each. Then from only fifty acres of the cutover land they salvaged $22,000 worth of timber—logs,

(*Turn to page* 190)

From just fifty acres of snags, windfalls and cull logs left by previous lumbermen, Harry Gardner salvaged $22,000 in merchantable wood. The five-year-old Douglasfir (left) is typical of the natural reproduction growing amid the stumps

New outfits for the *Hiawathas*

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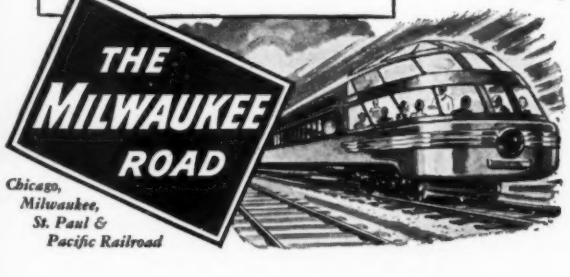

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Within a few weeks the AM and PM HIAWATHAS between Chicago-Milwaukee and St. Paul-Minneapolis will step out with new equipment from end to end. There'll be squeals of delight from the HIAWATHA tepee.

And no wonder! Coming will be brighter, handsomer coaches with spacious lounge rooms . . . radio-equipped Tip Top Tap cars for beverages and snacks . . . diagonal-seating dining cars . . . luxurious parlor cars with drawing rooms and, for the first time, glass-roofed Skytop Lounges.

During the year, The Milwaukee Road will add new members to its HIAWATHA fleet and re-equip existing trains. More new passenger train cars will be placed in service than on any other western railroad. H. Sengstacken, Passenger Traffic Manager, 820 Union Station, Chicago 6, Ill.

NEWS IN REVIEW

SECRETARY of the Interior Julius A. Krug has appointed a seven-member Advisory Committee on Conservation to advise him on matters related to the broad phases of conservation as they affect the policy, planning and administration of programs by the Department of the Interior. Members of the committee are Shirley W. Allen, Society of American Foresters; Ira N. Gabrielson, Wildlife Management Institute; Kenneth A. Reid, Izaak Walton League of America; Fairfield Osborn, New York Zoological Society; Miss Harlean James, American Planning and Civic Association; Bestor Robinson, Sierra Club; and Charles Moore, Dude Ranchers' Association.

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Maine and Illinois have announced new state foresters, while Texas reports the retirement on March 31 of State Forester W. E. White.

New forest commissioner of Maine is A. D. Nutting, state extension forester since 1931. He succeeds Raymond E. Rendall who entered private consulting work this past winter. Mr. Nutting is a native of Maine and a graduate, in forestry, of the University of Maine.

In Illinois, E. E. Nuuttila, who has been acting state forester since the resignation of A. J. Tomasek last year, is now state forester. He is a native of Colorado and a graduate of the school of forestry at the University of Michigan.

A successor to Mr. White in Texas has not been announced.

E. E. Nuuttila—new state forester of Illinois

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The First Inter-American Conference on the Conservation of Renewable Natural Resources will be held at Denver, Colorado, September 7 to 20. The first international meeting of its kind, it will bring together delegates from the American republics to consider the development and use on a sound scientific basis of the renewable natural resources of the hemisphere.

Among the problems to be discussed will be those arising out of deforestation, soil erosion, overgrazing, wildlife destruction, floods and failing water supplies. These problems are yearly growing more serious throughout the hemisphere because of inadequate conservation practices, mounting populations, and attempts to raise living standards.

The delegates will view at first hand soil conservation districts, forest and range experiment stations, the Rocky Mountain National Park and other places of interest. Irrigation projects will be studied, along with their relationship to agriculture, grazing and forestry practices on the land from which irrigation waters are derived.

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A concerted effort to develop one of the greatest regions of unexploited forests in the world will start in April with the opening near Rio de Janeiro, Brazil, of the International Forestry and Forest Products Conference for Latin America. Called by the United Nations Food and Agriculture Organization, the conference will include eighteen Latin American countries and others with interest in the forests of the region. They will seek to determine the best methods of building up their present forest and wood industries and converting their virgin forests into perpetual producers of wood.

A preliminary survey of the Latin American forestry situation made by FAO in 1946 reveals that thirty-nine percent of the land area in this region is forest land. Despite this wealth, Latin America imports almost twice as much timber as it exports.

The forestry and forest products standing committee of the United Nations Food and Agriculture Organization is composed of Lyle F. Watts, United States, chairman; Bernard Dufay, France, vice-chairman; and Georges Cerf, Belgium; Harold G. Champion, United Kingdom; Anders Fjelstad, Norway; S. C. Lee, China; D. A. Macdonald, Canada; Herman Mark, United States; Eino Sarri, Finland; and Paulo de Souza, Brazil.

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In line with the United Kingdom's long-range program for the maintenance of five million acres of well-managed forests, the British Forestry Commission plans to acquire 179 thousand acres of additional forests during the forestry year ending September 1948. It also is proposed to plant 23,000 acres, and replant 13,000. During the preceding forestry year, 22,916 acres were acquired, 17,577 acres were planted, and 8,695 acres were replanted.

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More than 1,400,000 paper bags carrying the printed message "Prevent Forest Fires and Keep Georgia Green," were distributed to Georgia grocers and other merchants by Union Bag & Paper Corporation as part of the "Keep Georgia Green Week" program launched in February.

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The Minnesota and Ontario Paper Company will sponsor an Army affiliated Engineer-Forestry Battalion to be organized and located at International Falls. The purpose is to develop a peace-time service group composed of technically trained men from within industry.

A. D. Nutting—named forest commissioner of Maine

Good Going

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You don't wait on weather with an Oliver "Cletrac" tractor in your logging crew! Firm ground or muddy, sticky going, this husky tractor helps you get out more logs per season . . . keeps right on working in spots that would mire down the average tractor.

Here's the secret! Only Oliver "Cletrac" gives you *protected high clearance* . . . an exclusive feature that permits the tractor to operate in bad weather without miring down . . . that lets it slide right over rocks and stumps without damage. And, the exclusive Oliver "Cletrac" steering principle that keeps power on both tracks always . . . even on turns . . . gives you *plus* pulling power that handles bigger loads. Easy to see why loggers call it the top tractor in the woods.

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PROVEN WORK POWER! For 24 years, Beebe Hoists have been the most dependable and efficient hand hoist manufactured! These compact, powerful hoists of high grade electric steel, serve faithfully every day thru the years.
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A resolution prepared by the forestry committee of the American Paper and Pulp Association and approved by the executive committee and board of governors of the association, indicates that tree farm work will be accelerated during the coming year in all states where the pulp and paper industry owns timberlands.

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New trustees of the American Forest Products Industries are C. O. Brown, woodland manager, International Paper Company; Alexander Calder, president of Union Bag and Paper Company; Stuart B. Copeland, president of the Northwest Paper Company; P. H. Glatfelter, president of P. H. Glatfelter Company; James L. Madden, president of Hollingsworth and Whitney; Clyde S. Martin, chief forester of the Weyerhaeuser Timber Company; and William Swindells, vice-president of the Willamette Lumber Company.

• • • •

About fifty percent of the mill waste of the Rhinelander Paper Company, Rhinelander, Wisconsin, will be utilized by a new yeast plant, scheduled to be in production sometime this year. This will be the first large scale commercial attempt to produce fodder yeast from sulfite pulp wastes. Eleven Wisconsin sulfite mills and the Detroit Sulphite Pulp and Paper Company have invested around $400,000 in the enterprise which will be known as the Lake States Yeast Corporation. A production of around four tons of yeast a day is anticipated.

• • • •

To convert chemical by-products of pulp and paper manufacture into industrial fats, rosin and edible foodstuffs is the aim of a new $1,700,000 plant being constructed at Panama City, Florida. Owned by the International Paper Company and the American Cyanamid Company, the new enterprise will be known as the Arizona Chemical Corporation.

• • • •

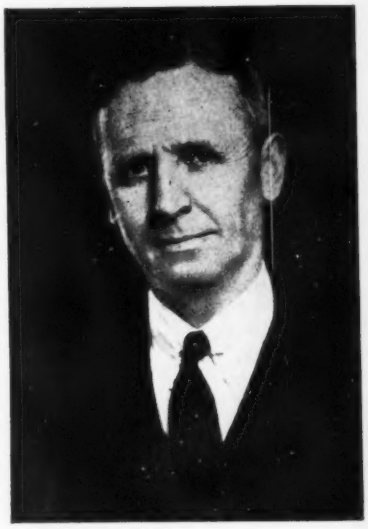
A survey of the timber along the river bottoms of the Missouri River Basin in South Dakota is being made by the State Natural Resources Commission. Data will be assembled on the volume, quality and location of the timber and will be used as basis for advising owners of proper harvesting and marketing practices.

• • • •

Virginia Senate Bill No. 28 provides for a severance tax of ten cents a thousand board feet for pine and cedar lumber and five cents a thousand for hardwood and cypress lumber from persons engaged in production and manufacture of forest products in the state. Revenues would be used to help support the forestry program of the Virginia Conservation Commission.

• • • •

Kentucky's appropriation of $100,000 for forestry work for each of the next two years has been passed unanimously by both houses. This is an increase of $25,000 over the 1947-48 appropriations. In addition, $25,000 was appropriated for capital outlays.



Shirley W. Allen — forestry adviser on Krug's committee

The U. S. Forest Service proposes to establish a cooperative sustained yield unit at Woodleaf, California, which will pool one and three-quarters billion feet of public and privately owned timber in a lumber operation based on conservative forestry practice. The proposed unit would assure a sustained yield of forest products from 106 thousand acres of timberland and would stabilize employment for about 175 wage-earners in the Woodleaf vicinity. The agreement would run for fifty years (until 1998).

• • • •

Fresh-water fishermen in the United States purchased 12,620,464 anglers' licenses during the fiscal year ended June 30, 1947, at a cost of $22,667,301, according to the Fish and Wildlife Service. Compared with the previous year when 11,068,717 licenses were sold by the various states for $15,003,796, the 1946-47 season totals show an increase of 1,551,747 in licenses and $7,663,505 in revenue, and break all previous records.

California exceeded all other states

in revenue received with $1,718,066. Minnesota ranked second with $1,328,316, followed by New York with $1,316,513; Missouri, $1,095,219; Michigan, $1,094,694; Wisconsin, $1,093,082; Washington, $1,064,993; Pennsylvania, $978,315; Oregon, $831,696; and Ohio, $680,364.

In the number of licenses issued, Michigan led with 989,333. California ranked second with 848,446, followed by Minnesota with 765,335; Ohio, 669,613; Wisconsin, 653,147; New York, 631,238; Pennsylvania, 599,572; Illinois, 536,868; Missouri, 526,737; and Indiana, 522,033.

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The design selected for the federal "duck stamp" to be used during the 1948-49 hunting season will feature buffle-head ducks, the work of Maynard Reece, staff artist for the Iowa State Department of History and Archives.

Fifteenth in the series, the new migratory bird hunting stamp, generally called "duck stamp," will be available to hunters and philatelists at all first and second class post offices on July 1. All migratory-waterfowl hunters over sixteen years of age are required by law to purchase and have a stamp of current issue duly signed when hunting. During the 1946-47 season, 2,016,819 duck stamps were sold, the highest total for any season to date.

• • • •

Meetings You Should Attend

April 8, 9, 10—Twenty-sixth Annual Convention; Izaak Walton League—La Salle Hotel, Chicago, Illinois.

April 26 to 29—Thirty-sixth Annual Meeting; Chamber of Commerce of the United States—Washington, D. C.

May 13, 14, 15—Pacific Regional Conference; United Nations Educational, Scientific and Cultural Organization. San Francisco, California.

May 20, 21, 22—Western Chapter National Shade Tree Conference—Santa Barbara, California.

June 21, 22, 23—Annual School for Conservation of Natural Resources; Garden Clubs of South Carolina and Federated Women's Clubs—Table Rock State Park, South Carolina.

June 26, 27, 28—Eleventh Appalachian Trail Conference—Fontana Dam, North Carolina.

September 7 to 20—Inter-American Conference on Conservation of Renewable Natural Resources—Denver, Colorado.

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Cut any Tree at any Angle

The new, lightweight, low-priced Mall Power Saws make quick, easy work of cutting brush or big timber—hard or soft wood. They work with record-breaking speed—changing from horizontal to vertical to any angle cut with a flick of the index lever.

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A sturdy Model 7 Gasoline Engine operates all three Mall Power Saws—the Mall Chain Saw (18" to 12' capacities), the Mall Bow Chain Saw (18" capacity), and the Mall Model 30 Circular Saw (22" capacity)—thereby supplying a complete line of interchangeable Power Saws for every heavy cutting need.

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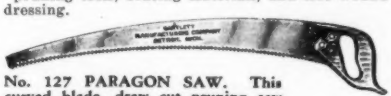

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CONSERVATION IN *Congress*

By A. G. Hall

Three southern congressmen have taken the lead in an attempt to increase the authorization of funds for cooperative fire prevention and control activities under the Clarke-McNary Act. Identical bills have been introduced by Representative Sikes of Florida (H.R. 5727) and Senator Ellender (S. 2275) and Representative Allen (H.R. 5827), both of Louisiana. The present statutory limitation on federal cooperation under the act is $9,000,000—the amount appropriated last year and the amount placed in the 1948-49 budget.

The Clarke-McNary Act establishes a fifty-fifty sharing of the costs of fire protection by the federal government on the one hand and the states and private owners on the other. However, with the present authorization, the federal government is paying only thirty-three percent of the $27,000,000 costs, and there are still 120 million acres of forest land unprotected.

The new bills propose to increase the federal authorization to $20,000,000—the federal share of the $40,000,000 program needed to provide adequate protection to all forest lands. In order to build up fire control organizations in an orderly pattern, the bills propose that the present authorization be stepped-up $2,000,000 a year until the new proposed authorization limit is reached.

The bills are ones which should gain the support of every conservationist, whether his interest lies in timber, wildlife, water, or soil conservation. The $20,000,000 top limit to the proposal seems very small indeed when compared with losses from forest fire. The bills have been referred to the House Committee on Agriculture and to the Senate Committee on Agriculture and Forestry.

Rapid action has taken place on the Senate bill, S. 1090, to safeguard the exceptional wilderness canoe values within the Superior National Forest in Minnesota. This bill, which was introduced last April by Senators Thye and Ball of Minnesota, is identical to H.R. 2642, introduced in March 1947, by Representative Blatnik, also of Minnesota. The Blatnik bill (See "What Shall We Do About Quetico-Superior?" in the January number) hit a snag in the House Committee on Agriculture when opposition was raised to the bill's proposal to pay the local counties twelve cents an acre annually in addition to twenty-five percent of gross Forest Service receipts from the lands to be included in the roadless areas. This identical provision was also in the Senate bill, but the Senate Committee on Agriculture and Forestry amended it to provide for seven and a half cents an acre payment or twenty-five percent of the gross receipts, whichever may be greater, annually. Reported from the committee on March 5, the bill passed the Senate on March 8 and has been referred to the House where doubtless it will be considered in place of the Blatnik bill.

Also passed by the Senate on March 8 were H.R. 4980 for the acquisition of additional lands within Glacier National Park, and H.R. 3175 to make additions to the Shasta National Forest. Both bills now go to the President for signature.

Of possible future significance to fire control is Senator Capper's bill, S. 2295, introduced on March 11 to direct the Weather Bureau to conduct experiments with respect to methods of controlling rainfall.

Senator Cordon of Oregon, has introduced a bill, S.2134, to authorize an annual appropriation of $500,000,000 for road construction and $25,000,000 for forest highways and $12,500,000 for forest roads and trails.

On March 2, H.R. 5049, introduced by Representative Ellsworth of Oregon, on January 20, to reopen the Oregon and California and Coos Bay Wagon Road lands to location and entry was passed by the Senate.

The establishment of a National Water Conservation Authority is proposed in S. 2255 introduced on March 3 by Senator McCarran of Nevada. The purpose of the authority is to study the problems of the conservation, development and utilization of the surface and subterranean water resources of the United States with particular reference to arid and semi-arid regions of the West. It calls also for the conservation and development of resources.

H.R. 5714 introduced by Representative Knutson of Minnesota, on March 4, would authorize the Secretary of the Interior to permit prospecting, development, mining, removal and utilization of mineral resources of public domain lands, but only with the consent and under conditions set by the Secretary of Agriculture to assure proper protection of national forest lands. Similar protection is not provided for other public lands.

On February 18 another bill for the establishment of a National Science Foundation was introduced. Representative Hesselton of Massachusetts proposes, in H.R. 5532, a foundation of twenty-four members and four major divisions: medical research; mathematical, physical and engineering sciences; biological sciences; and scientific personnel and education. The bill has been referred to the Committee on Interstate and Foreign Commerce.

The "urgent deficiency appropriations" bill, H.R. 5525, for the fiscal year ending June 30, 1948 passed the House on March 1. It includes $843,000, to remain available until December 31, 1948, for forest pest control; an additional $475,000 for national forest protection and management, and $4,932,000 to pay the costs of fighting forest fires on national forests.

The House Committee on Agriculture has been meeting on various bills relating to the administration and handling of soil conservation activities in the Department of Agriculture. Chief among the bills are H.R. 4150 and H.R. 4151 introduced last July 10 by Representatives Cooley and Hill of North Carolina and Colorado, respectively, and H.R. 4417 introduced by Representative Jensen of Iowa, last July 26. The Hill-Cooley bills would transfer the functions of the Soil Conservation Service to the Extension Service in the interests of avoiding duplication and conflicts in agricultural soil and water programs. The Jensen bill provides for a national land policy based on the conservation of soil and water resources, with technical direction of programs under the Soil Conservation Service through the soil conservation districts.

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DRENCH is a properly formulated wetting agent, readily soluble in all naturally occurring water supplies over a wide temperature range and does not require special nozzle equipment.

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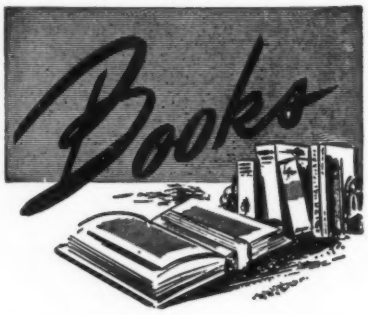

BREAKING NEW GROUND, by Gifford Pinchot. Published by Harcourt, Brace & Co. 1947. New York City. 522 pages, illus. Price $5.

This book is first of all an autobiography, largely from 1889 to 1912, of Gifford Pinchot and his part in American forestry and the conservation of natural resources. Secondly, it is first-hand history of the start and growth of the conservation movement in this country, in the Western Hemisphere if not internationally.

It tells in plain language the parts played by Presidents Cleveland, McKinley, Theodore Roosevelt, and Taft and, as an interpolation of 1944-45 in the book's chronology—Franklin Roosevelt's notes to Pinchot giving strong support to an international conference on conservation. Being an autobiography, this is GP's personal and very human story. While it is largely based on government documents and records, its main value and interest are in the liberal quotations from Pinchot's own notes and memos at the time the incidents took place.

The author is far too modest as to his own role in this drama. He gives credit to Carl Schurz, Cleveland, Fernow, Theodore Roosevelt, to those other federal officials who backed him up—to McGee, Newell, Davis, Hague, Gannett, Bowers, Coville—and especially to those who fought in the Taft regime the good fight with him—Price, Shaw, Woodruff, Glavis, and the unknown but courageous clerk, Fred Kirby. Jumping thirty-two years ahead of his story, the author gives credit to Franklin Roosevelt for his stand in 1944-5 on an international conference on the conservation of natural resources as a basis for lasting world peace. And the author credits his father, James W. Pinchot, as "the Father of American Forestry."

The book is divided into thirteen parts, under which are ninety chapters or sub-heads. The titles of these parts are: Choosing a Lifework; On the Trail; Public Awakening; The President Makes the Issue; Spade Work; Pursuing the Goal; Mission in the East; The Goal at Last; Practicing Our Preaching; A World Movement is Born; End of An Era; The Pay-Off; Let the People Judge. The volume is an autobiographical history of a man who was the originator and mainspring of American conservation for over forty-five years. The keynote of the book is "the Public Good Comes First," as it was of Gifford Pinchot's whole public life. Every resource-minded American—and certainly every American forester—should know this human story of the start and later battles for forestry and conservation in this country.—*John D. Guthrie.*

OUTDOORS GUIDE, by Deep-river Jim. Published by Didier, New York 21, New York. 240 pages, illus. Price, $2.50, cloth-bound; $1.95 paper-bound.

A compilation of short, distinctive articles in the field of the out-of-doors. Its five parts—nature, camping, fishing, hunting and boating—are written by outstanding authors and outdoorsmen. The book is one to be read for enjoyment, studied for its utility value and kept as a handy reference.

NEW RICHES FROM THE SOIL, by Wheeler McMillen. Published by D. Van Nostrand Company, Inc., New York 3, New York. 396 pages. Price, $3.

Clothing from milk and chicken feathers, tires from cotton, building materials from waste fibers and cigarette paper from flax waste are a few of the developments produced by chemurgy—the processes of industrial utilization of plant raw materials. In this book the editor-in-chief of the *Farm Journal*, a leader in the chemurgic field, tells the story of how it all began and how the products of the soil become increasingly important to our economy and life.

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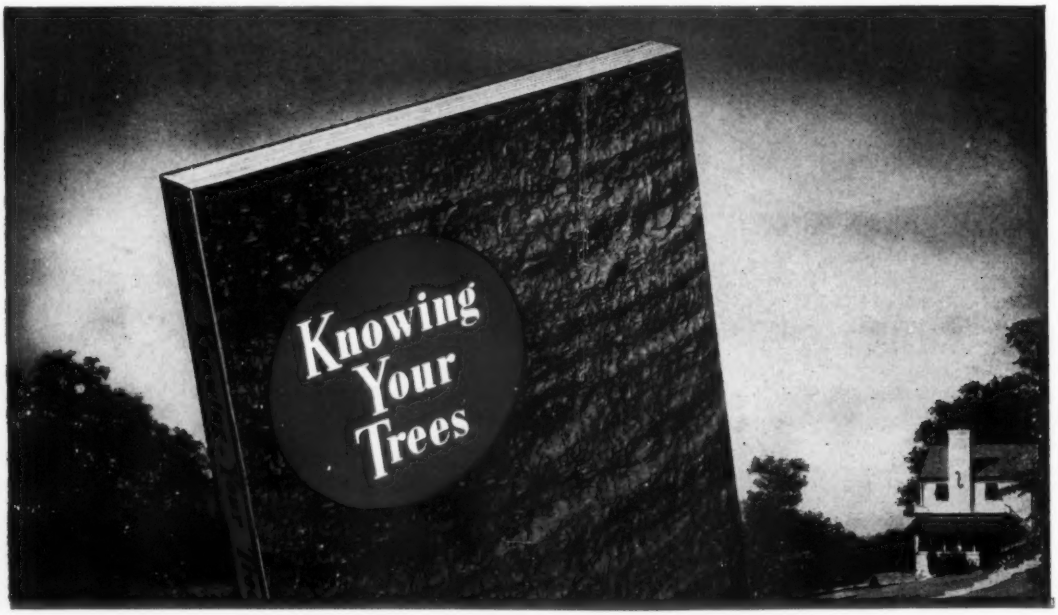

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The Unknown Flock of Trumpeter Swans

By H. H. CHAPMAN

For years much has been said about the rescue of the trumpeter swan from extermination, through the efforts of federal authorities in protecting the small nucleus around Yellowstone National Park and Montana's Red Rock Lakes, by creating a national wildlife refuge and prohibiting the killing of the snow goose, because of its resemblance to the swan. These efforts bid fair to be successful. The number of swans has increased from 73 to nearly 500. But what is not generally known and seldom mentioned is that a sizable flock of these rare birds has survived in an inaccessible valley in British Columbia and is cared for by a hardy settler, Ralph A. Edwards, subsidized by the Canadian government.

The site is none too favorable and the birds, some 60 to 70 in number, barely hold their own against losses from starvation and exposure during severe winters. John P. Holman of Bridgeport, Connecticut, author of the book "Sheep and Bear Trails," discovered this flock on a trip in 1925 in which he crossed the mountains from east to west, guided in part by an ancient squaw over unexplored routes. It was he who interested the Canadian authorities to finance the settler, who packs grain in for the birds. The Canadians are not advertising the whereabouts of this remnant flock.

In a letter received by Mr. Holman in September 1946, Mr. Edwards wrote: "We are still feeding the swans in winter and they are getting tamer, but not too tame. . . . I think

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they are holding their own, or nearly so. Some people over on One Eye Lake were feeding a goose one day just before Christmas last winter when a group of five cygnets (trumpeters) came in to the lake and took up with the goose and got to eating grain. No old ones with them . . . they got very tame so that Sam Colwell could take hold of their necks . . . they went right into his office. But they left in the spring the same as the other swans. It will be interesting to know if they come home again next winter.

"We have a 150-foot raft-bridge across the river and we feed the swans off that . . . they sit in the river just a little ways away . . . Our daughter Trudy feeds them while I am away on the trapline. We have found that feeding them every day gets better results than feeding a sack at a time once in three or four days."

The general public, as well as scientists and ornithologists, who have come to believe that the preservation of the trumpeter swan is dependent entirely on the work of the federal authorities in the Yellowstone region will be pleased to learn that the swan is not laying all its eggs in one basket, but that there are two distinct centers in which this species is being perpetuated.

Park, Forest Services to Protect Blue Ridge Area

Protection of natural features and beauty along with development of the recreational, scenic and forestry values of western North Carolina's famous Grandfather Mountain-Linville Gorge area, on the route of the Blue Ridge Parkway being built to connect the Shenandoah and Great Smoky Mountain national parks, has been furthered by an inter-bureau agreement between the U. S. Forest Service and the National Park Service.

The agreement sets up a special administrative area of approximately 55,000 acres of privately and publicly owned land through which the parkway route runs.

Approximately 7,500 acres in the vicinity of Grandfather Mountain and including Grandmother Mountain, and approximately 5,500 acres bordering the Linville River and including the famed Linville Falls, southwest of the two mountains, are marked for inclusion within the immediate boundaries of the parkway.

The document provides that 6,700 acres of the Linville Gorge, in the Pisgah National Forest, is to be designated as a "Wild Area."

Krug's Report Calls for Better Resource Management

THE United States must abandon prewar levels of production and prepare to meet demands created by continuing population expansion, Secretary of the Interior J. A. Krug declared in his annual report.

The report stresses the urgent need for conservation of human as well as natural resources and calls for full and wise use of modern extractive and manufacturing techniques.

Conservation requires inventory, the report states, for without knowledge of the state and extent of our resources, intelligent and effective production programs cannot be sustained. It means also efficient management of resources and calls for expenditure of public funds for planning exploratory and development programs where private capital cannot assume the long term burden.

While the nation is beginning to realize the necessity for conservation to attain full production, the report declares that it has a long way to go to repair past damage to natural resources.

The report states that half of the 230 million acres of range lands in the West need restorative attention, and perhaps as much as a fifth are in critical condition. Remedial treatment has been at the rate of only a little more than 1,000,000 acres a year. The Bureau of Land Management has under way a conservation program on some 11,000,000 acres, with another 49,000,000 acres scheduled for the immediate future.

The Secretary pointed out that fiscal year 1947 appropriations for fire prevention and control totaled only $1,330,000 for the entire 400 million acres of forest and range which requires such protection. As allocated, this amounted to .6 cent for lands in the continental United States and only eight-tenths of a mill for Alaskan lands.

In relation to the national parks, he said, "The sheer weight of the numbers who come to many of the most popular areas, and the fact that the Park Service's field forces continue to be insufficient for proper protection against the careless and the vandalistic, accentuate a replanning problem which has existed for many years."

The Roadsides of Today

(*From page* 164)

Wilbur Cross Parkway will become part of the rugged Connecticut landscape.

Westchester County, in New York, has every reason to be proud of its county park system. Its comprehensive plan includes parks, beaches, reservations, and forest preserves, with a system of connecting parkways. The three highspeed parkways out of New York City follow natural routes along stream valleys in a northerly direction: the Saw Mill River and the Hutchinson, and midway between the two runs the Bronx River Parkway.

Following the low ground of the river valley, and the first of the three to be built, was the Bronx River Parkway. The rolling strips of reservation on both sides, not only give control of the river itself, but eliminates the roadside parking problem, billboards and other nuisances. Some 100 thousand native trees, 165 thousand shrubs and 10,000 flowering plants were used. The parkway crosses and recrosses the Bronx River at many points, opening up many vistas, some through wooded glens, and then again open areas with glimpses of the river and small lakes, providing constantly changing scenery of rural charm. A great deal of the charm and natural beauty of Westchester County has been preserved for our own, as well as future generations.

Worthwhile roadside improvements have been made by civic organizations from time to time; however, there is still much to be done, and a number of serious problems confront us. As some of our public officials are so apathetic, a group of public-spirited citizens in each community could accomplish much by forming and developing a civilian public improvement program. One problem is the alarming increase of poison ivy and ragweed, the latter responsible for eighty to ninety percent of our summer hayfever.

Obnoxious advertising signs are on the increase. Legislation is needed here, and proper zoning. Our roadsides are in a deplorable condition since so many ice cream containers and wrappers have been thrown around. Garbage, cans, and other refuse are also being dumped along the roadsides, sometimes marring some of the most beautiful scenery. By "letting George do it," nothing will be accomplished. A well directed "cleanup" campaign, followed by local laws being revised, will make your community a better and more attractive place to live in. The individual cannot do much, but a citizens' committee, plus concerted action by the men's and women's clubs can do the job.

Trees are the noblest expression of plant life. They have always exercised a strong influence on the human race. Therefore, what could be more fitting than the living memorial that is being developed by the National Council of Garden Clubs? In every state a major highway is being planted with trees and dedicated to those who served in World War II. The story of the "Blue Star Memorial Highway," and also the famous "Blue Star Drive" in New Jersey, along which dogwoods are planted, was told in AMERICAN FORESTS (May, 1947).

Here is a suggestion: why not plant a memorial drive, a public park, town forest, or outdoor recreation center, or even an avenue of beautiful trees, objects of lasting usefulness and beauty, not only while we live, but a legacy to hand down to the generations that follow.

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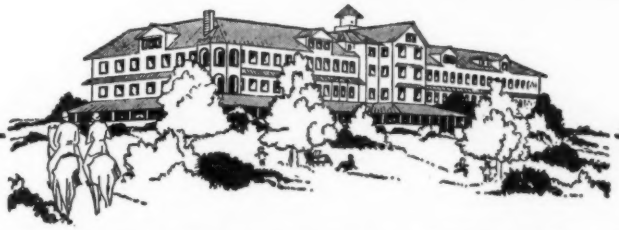

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Cock-of-the-Woods

(*From page* 165)

reproductive rate is low, it couldn't long survive if generally accepted as a game bird.

The "Great God woodpecker" loves the forests of larger trees. So much so, in fact, that the removal of the venerable timber stands of earlier years has been responsible more than guns in reducing his population. However, he still persists not only in the more extensive remnants of old forest, but in certain, small, scattered areas of big trees, and in the larger second growths. Where the young, second-growth saplings closely border his preferred woods, he isn't averse to venturing into them.

Among his beloved trees he feeds not only in lofty perches, but descends to the lowest reaches that offer food, even to logs lying on the ground. Often the base of a living tree will exhibit a neat, square hole drilled several inches into the hard wood, and a little pile of ax-like chips below. This is where the pileated, with his uncanny sense of detection, has found the precise spot at which to bore for carpenter ants. Despite the hole, the woodpecker has performed the tree a great service, for carpenter ants, entering through the tree's roots, eat the wood of its heart.

In examining the stomachs of pileated woodpeckers, some observers have counted these ants by the thousand. It is the bird's long, sticky tongue that enables it to extract the ants so well. When the prey is soft grubs instead, the woodpecker shoots out the lance-like, barbed tip of its tongue to stab the food, and draws it irresistably in.

Like all other woodpeckers, the pileated's head parts — eyes, ears, brain—are specially adapted to withstand the shock of its hammering, which might kill it otherwise.

Fortunately, few natural enemies can subdue the mighty "cock-of-the-woods." Too large and strong for the smaller hawks, he is generally too adept for the big ones. By day few ground-prowling predators roam, while at night he sleeps far above their heads.

Once I interrupted a pileated that was being harrassed by a goshawk. Although I was too late to observe the main action, evidently the woodpecker, on the side of a tall tree, had been able simply to hop behind the tree trunk each time he espied the hawk lunging toward him. While I watched, the hawk departed from the scene, probably to seek easier game. Then the great woodpecker sprang into the air with a ringing series of defiant "*quas*" that might well have been hurled after the hawk!

With the first hint of spring the "cock-of-the-wood's" fancy lightly turns, and he abandons his carefree, solitary life to court a mate. By means of much head-bobbing and feather-displaying he subsequently wins her, and together they set to work on the serious business of carving a nesting cavity. Twelve to eighty feet up in a dead tree—rarely a live one—they drill a hole about three and a half inches in diameter. Once inside they laboriously gouge downward, hollowing out an oval space around twenty inches deep, sometimes much deeper, even over three feet.

Seeming to accept the grueling task only as a joy, the pair often construct several trial nests, as if they could be satisfied with none but the very finest.

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By so doing they unwittingly create homes for many of their fellow woodland denizens. The beneficial little screech owl, the sparrow hawk, the tree-nesting wood duck, the hooded merganser, the diminutive saw-whet owl, the flying squirrels and the deer mouse. All are quick to adopt the unused holes for their own. Even the pileateds themselves return to these ready-made shelters during the most severe storms.

In their completed home the "Indian hen" lays her three to five glassy white eggs, each about one and a half inches long. Her faithful mate shares the responsibilities through incubation and rearing the young. Rather than attempting to carry tens of thousands of ants and other insects to their offspring, the parents eat all of the food first and, jabbing their long bills down the necks of the hungry young birds, regurgitate the needs of the hour.

In midsummer the parents introduce their ungainly likenesses to the world of trees. By early autumn the new woodpeckers can emit as loud a whoop or throw as huge a chip as their elders. The family then breaks up, and all go their solitary ways until another season.

April Trout are Best

(*From page* 161)

biggest trout I had ever snagged!

After that it was a fight in which no holds were barred. My opponent had been to the wars before and he knew what to do and he did it. He sulked on the bottom and smashed at the leader with his sturdy tail. I timed his smashes, dropped the tip of the rod, made them ineffectual. He tried vainly to snarl the line around a sunken log. He rushed me once, nearly caught me off guard. At long last I snugged in line, brought him to net. He was a rainbow, chunky, beautifully colored and proportioned, the largest trout I had ever caught. Later, when he was cleaned, he weighed an even three-and-a-half pounds. He is still my biggest trout.

I was weary and sweating when it was over, but very happy. It was nearly noon and I was famished. Doc was to end his morning fishing at the cabin, pack some supplies in the car and meet us at the bridge at noon. When I got there, Ed already had a cheerful fire going and both of us were grateful for its warmth.

Using garden hackle, Ed had caught seven trout, none of them under twelve inches. A fine creel and he was happy about it. A horn sounded and Doc parked the car close to the fire. We soon had the coffee pot on, hamburgers and onions sizzling in the frying pan. We ate without ceremony. We gulped tin cupsful of steaming coffee and it tasted better than it had smelled. Which means that it was superlative.

Doc's morning had been crowned with success; he had a dozen trout, three of which weighed more than two pounds each. We huddled close to the fire, enjoyed our brief period of relaxation and our smokes. We exchanged experiences and made plans for the afternoon. I proposed to fish upstream to the cabin and call it a day, a short afternoon. After all, it was my job to cook dinner. Besides a little rest would not be amiss to a very weary body.

Good luck attended my last hour's fishing. Then disaster hit me fore and aft. Just below the cabin I connected with a big fellow in some fast water. He rushed me and I tried to back-pedal, a most unfortunate strategy, as I stumbled and sat down in three feet of icy water. The shock was so great and so numbing that I dropped my rod. When I got to my

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feet I was the coldest, maddest individual who ever wore waders. Fortunately, I caught sight of my reel under water, plunged my arms down and retrieved the rod and reel. The trout, naturally, was gone. On shore I emptied my waders, climbed back into them and hurried on numb feet to the cabin.

Let no one tell you that death by freezing is a delightful feeling where the victim comfortably drowses off into a deep sleep. Probably I was far from freezing, but I was acutely uncomfortable.

In the cabin the fireplace was soon roaring. I disrobed, rubbed my goose-pimpled numb body with a heavy towel and partook generously of a liquid calculated to cure or alleviate chills. Within a half hour I felt normal. I napped for an hour before I started supper. Just at dusk I heard the car and Ed and Doc stormed in with full creels and exciting tales.

They were, they explained, exceedingly thirsty and on the verge of starvation. I attended to their thirst while they changed into warm, dry clothing.

Supper was simple but adequate. According to custom, there was a thick steak, broiled to a turn, juicy and tender. Baked potatoes, watercress salad, hot corn bread, coffee and a big plate of store cookies—it was enough, but there wasn't any left when we pushed back and gathered around the fireplace.

I think Doc spoke for all of us. He sipped his third cup of coffee and his round face was red from the wind, but his china-blue eyes twinkled. He lifted his cup and offered a toast.

"Here's to April trout," he said, "the best darned fishing in the world!"

Managing Your Woodlands

(*From page* 176)

snags and culls which were not worth the lumber company's time back in the 30's.

Harry estimates that he and his family crew will be able to continue to work the woodland at a profit for the rest of their lives. For, as he removes the salvageable material the young growth is still coming on for another harvest. Where natural restocking is not adequate, the Gardners have planted trees. Last spring they set out 3,000 Port-Orford-cedars, and they plan to go ahead with the planting program until all open areas are fully stocked.

The Gardner forest enterprise eventually will be turned over to the sons to operate. Harry and Mrs. Gardner have selected a new homesite in a grove of big-leaf maples. Here they will retire in a home built of lumber from his stump ranch, complete even to hardwood floors of native maple.

Remember the Chestnut

(*From page* 159)

ably because they were available, the earliest breeding work in the long search for blight resistance was done with Japanese, European, and native species. The Chinese chestnut, though superior to the Japanese and just as resistant to blight, probably did not enter the United States until 1903, when C. S. Sargent brought a number of specimen plants from Peiping to the Arnold Arboretum in Boston. In 1906, from Tientsin, Meyer sent the first Chinese nuts used for selection and breeding.

Van Fleet died in 1922, and three years later Russell B. Clapper of the Division of Forest Pathology took over the chestnut breeding work. After testing various possibilities of combining Japanese, Chinese and native species, Clapper found certain selections of the Chinese crossed with the native chestnut produced trees that were resistant, fast-growing and upright. Graves of the Brooklyn Botanic Garden found that a Japanese-American crossed with Chinese produced progeny showing much promise.

The crosses which Clapper has produced are decidedly encouraging in that many possess the best characteristics of both parents. In five or six years the young resistant chestnuts begin to bear nuts. The location of planting and the type of soil are important factors in the quality of the resistance. Trees which are carefully tended the first few years and are planted in rich deep soil are more liable to escape blight and to resist it if infection does occur.

One lot of these Chinese-American hybrids is increasing in diameter about one-half inch a year, and at twelve years they are now large enough for farm poles. In about twenty-five years, if they maintain

(*Turn to page* 192)

THE AMERICAN FORESTRY ASSOCIATION

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The Purpose

The American Forestry Association is a national organization—educational in character—for the advancement of the intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is (1) to bring about adequate protection and perpetuation of these resources by creating an enlightened public appreciation of the need of conserving them through wise use for the present and future welfare and enjoyment of all the people; (2) to make available to Americans in all walks of life a wider knowledge and appreciation of their forest resources and the part they can play in the social and industrial life of our nation.

The History MORE THAN half a century ago American men and women of vision, stirred by the rapid destruction of forests and forest life in the United States, began to raise their voices in behalf of conservation. Foreseeing the danger of allowing America's rich forests and vast natural wealth to be thoughtlessly wasted, these public-spirited individuals protested the needless destruction that was taking place. Out of their efforts came a collective force—The American Forestry Association, first organized in 1875 and made a national influence in 1882.

The Record THUS The American Forestry Association has a long record of efficient public service. The establishment of the United States Forest Service and the creation of the nationwide system of state and national forests and parks were due in no small part to the Association's efforts. Its educational work, extending over more than seventy years, has stimulated public action and built public support for protection against forest fires and floods; for prevention and control of soil erosion; for the development of conservation policies in forest management for continuous production through wise use; for the control of forest insects and diseases and the preservation of fish and wildlife.

The Support FROM AN ORGANIZATION of a few hundred members three decades ago, the Association has attained a substantial membership of many thousand men and women, living in every state of the Union and in foreign countries throughout the world. The funds of the Association are administered by a Board of Directors composed of individuals of national standing—men and women who give their services free, who have a practical understanding of the nation's present-day conservation needs, and are equipped through experience, ability, enthusiasm and training to advance the Association's program.

The Program BECAUSE OF its independent, non-political character, the work of The American Forestry Association is vitally necessary in the field of public service. It provides an unprejudiced influence for the development of sound conservation measures. It helps coordinate public, state and federal policies. It cooperates closely with federal, state and private agencies in conservation work. At the same time it initiates, sponsors and carries on needed projects in conservation in addition to its regular broad continuous program of education.

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resistance, they will be tall enough for telephone poles.

Clapper and Graves are chiefly interested in producing a disease-resistant timber tree, though neither would be adverse to bringing back the nut-gathering parties of the old days.

Ever since Frank Meyer began sending chestnuts back to the United States from Japan, China and Korea, the Nut Investigations Division of the Department of Agriculture has been selecting the better varieties for orchard raising. Clarence A. Reed, who has been working on this project for many years, claims that special selections of the department are just as good for nut purposes as were our native chestnuts. The Chinese chestnut, especially certain strains, is sweet and delicately textured. It is this type of nut which will be grown in the future chestnut orchards of the East.

American chestnuts have been grown in California and a number of other western states ever since the early gold seekers introduced them. In the period 1914-1934 blight was discovered in British Columbia, Washington and California, but prompt action on the part of pathologists prevented the infections from spreading.

Only one type of fungus spore, *pycnospore*, has so far been found in California, but it is generally accepted that the *ascospore* stage was prevented from showing up only by prompt and thorough control measures. Most of the infections were detected at the groundline of the tree trunks and, as *pycnospores* were found to live in irrigation water for over a month, control methods included building earthern dikes about the bases of the trees. In some cases the lower part of the trunks were painted with shellac. The orchards are inspected at least twice a year, and all diseased trees immediately destroyed.

In Europe it is another sory. Just before the last war, blight appeared with a vengeance. In 1938, evidence of the disease was found on trees about twenty miles north of Genoa, in Italy. Later it appeared near the port of Naples and at Tarcento, north of the Udine. Until the war, control measures were enforced. Quarantine of the infected localities and destruction of diseased trees were exactingly carried out.

Now the blight has full sway. War and the consequences of war have made it impossible to organize the control necessary to check it.

There is an old Indian myth which tells the story of an Iroquois boy who braved the perils of a deep chasm in the earth, wild animals, a serpent and a woman whose single penetrating glance would kill, to find magic chestnuts. He brought back a bagful of the precious nuts and, going up on the side hills, scattered them over the ground. Soon beautiful chestnut trees grew up and, the story concludes, "now all the world has chestnuts." This is no longer true, but perhaps if our plant breeders can brave the perils of congressional economy we may some day give resistant chestnuts to all the world.

AUTHORS

HARRY BOTSFORD (*April Trout Are Best*) when not conducting a public relations business in New York City, is writing of his hobbies—mainly fishing and outdoor cooking. JAMES D. CALLAHAN (*Crossett—Monument to Planned Forestry*) is a writer and editor of Crossett, Arkansas. MARGARET I. JARDINE (*The Roadsides of Today*) is a landscape architect of Groton, Massachusetts. HAROLD OLSON (*Seeding by Helicopter*) is western manager of the American Forest Products Industries, Inc., in Portland, Oregon. LLOYD SCHERER, JR. (*Cock-of-the-Woods*) lives in Duluth, Minnesota, and spends his weekends studying forests and wildlife. AMANDA ULM (*Remember the Chestnut!*) is a botanist of Berwyn Heights, Maryland. ROBERT K. WELDON (*When a Stream Runs Wild*) is district ranger in the Mount Rainier National Park, Washington. JOHN B. WOODS (*Woodlands of Kansas*) was director of the Association's Forest Resource Appraisal.

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